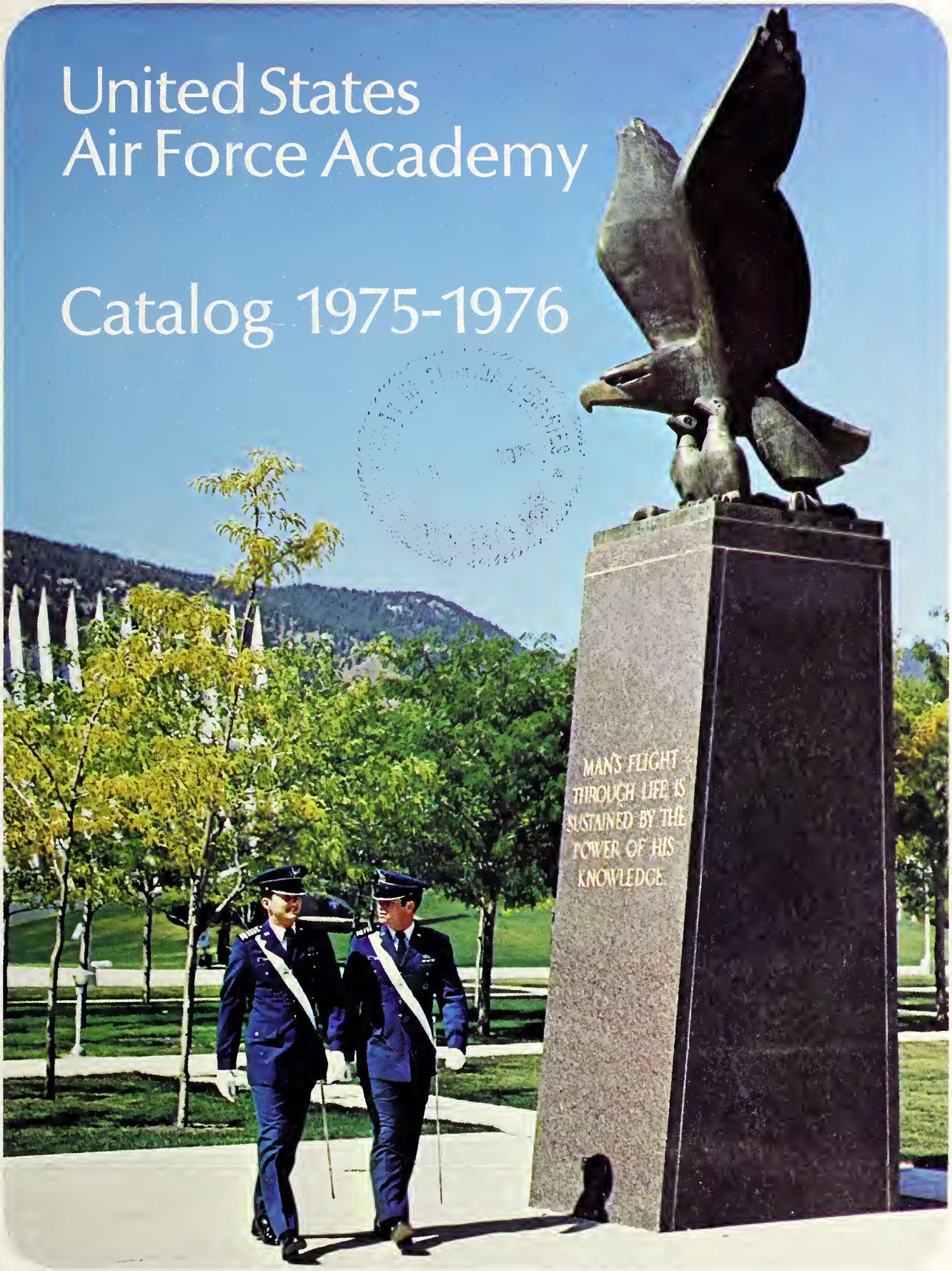
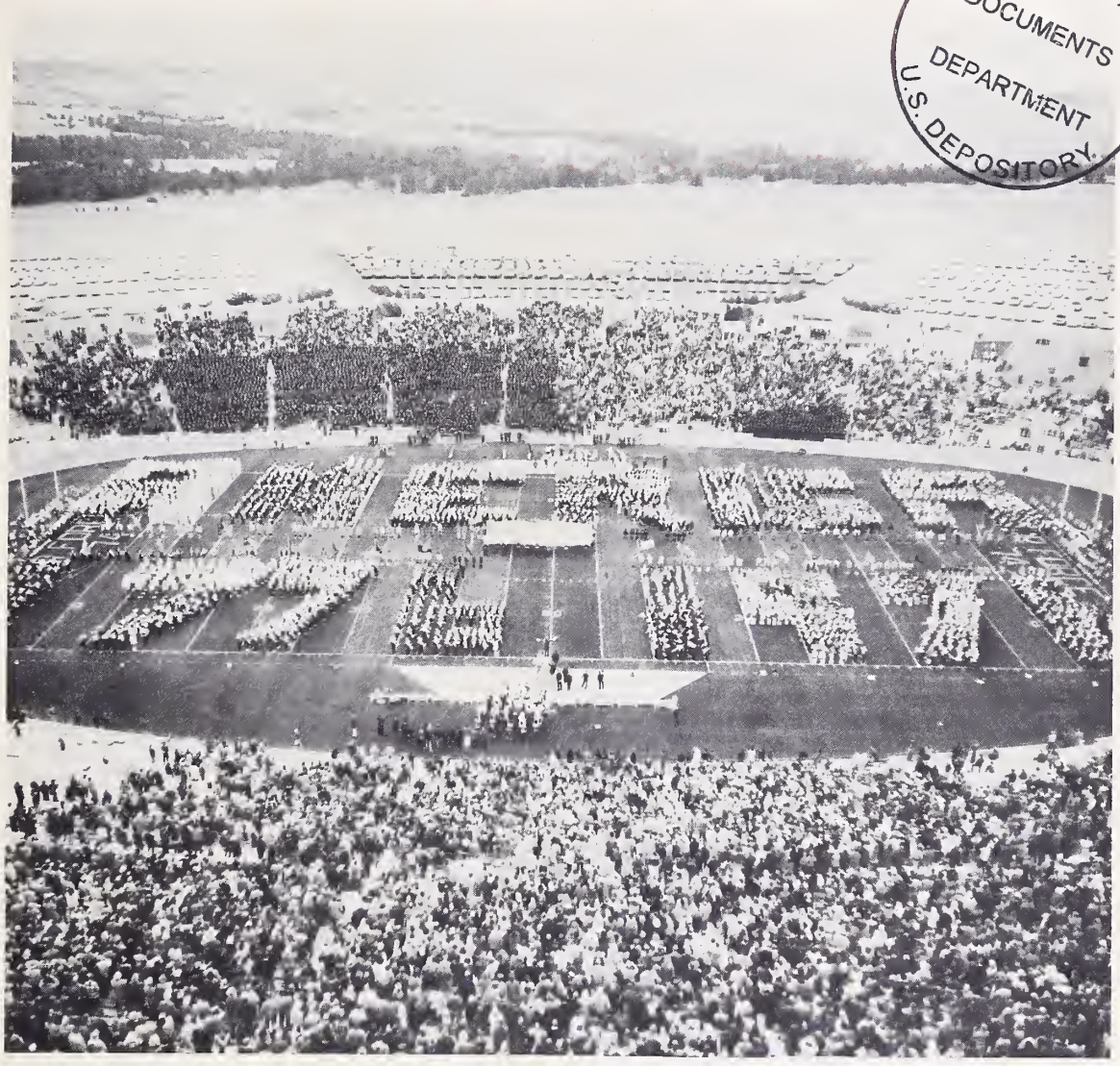
United States Air Force Academy

Catalog 1975-1976





Bands Day in Falcon Stadium

AMERICA

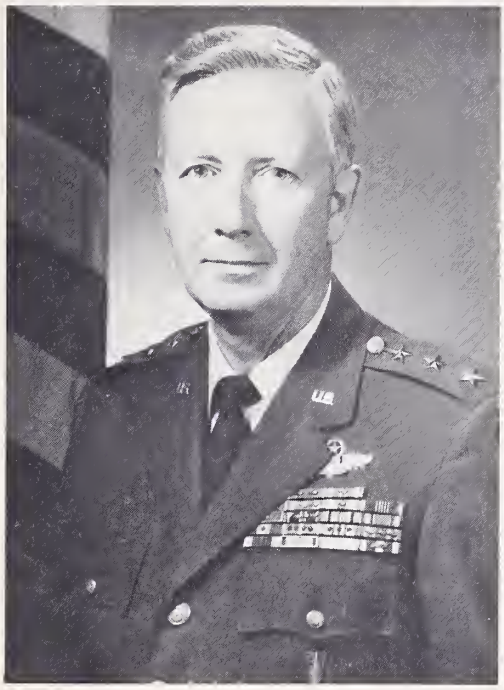
1776 • 1976

THE UNITED STATES AIR FORCE ACADEMY

annual catalog number 20 may 1975

The mission and administration of the Air Force Academy is under the direction of the Superintendent. Serving in the rank of a three star general, he holds a position similar to the president of a university. His functions involve many activities with cadets, visiting dignitaries, and the public.

Lt. General James R. Allen and the Air Force Cadet Wing honor the Secretary of the Air Force, John L. McLucas.



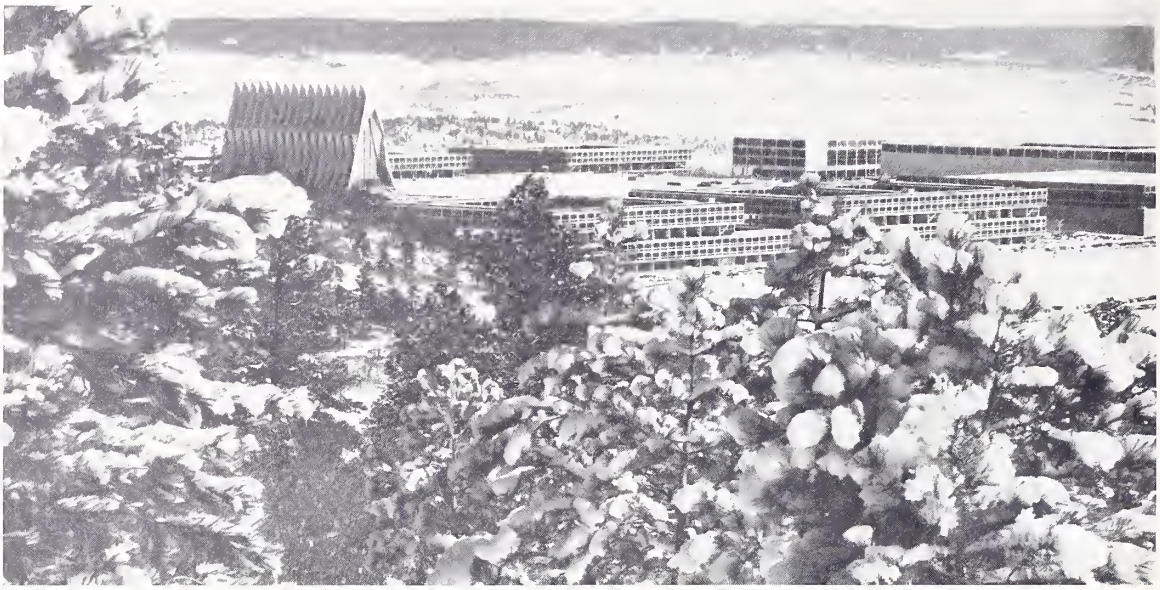
To Interested Young Men

The Air Force Academy will provide you with an outstanding education and prepare you for leadership in the United States Air Force. The Academy aspires to your total development through a curriculum uniquely blended with military and aviation leadership, academics, and athletics. The faculty and staff are dedicated to your development through the four years to graduation.

We expect you, however, to earn your Bachelor of Science degree and your commission as an Air Force officer. The mental and physical pressures involved in this achievement are demanding, but if you are positive, energetic, and motivated you can make it through all of the experiences and the challenges.

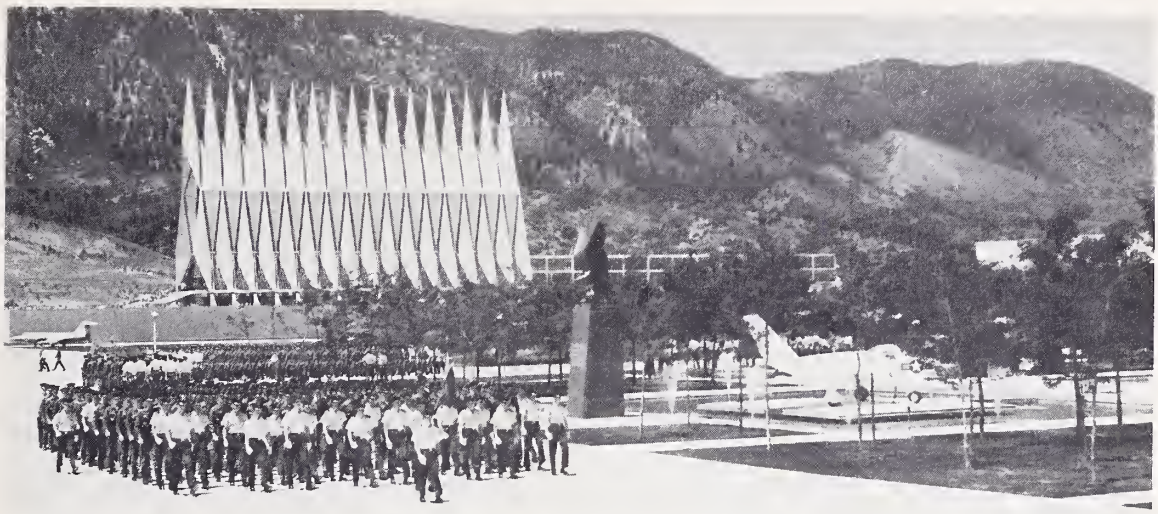
I hope that you will review the information contained in this catalog very carefully and then, based on this factual information, make your own decision about applying. You must be prepared to accept the commitment not only to succeed at the Academy but also to serve your country as an officer in the United States Air Force for a minimum of five years after graduation. Most of our graduates remain in the Air Force for a full career and we would expect you to be open minded about such a career for yourself.

JAMES R. ALLEN
Lieutenant General, USAF
Superintendent



CALENDAR 1975-1976

4 Jun 75	Wednesday	Summer Term Begins
30 Jun 75	Monday	Class of 1979 Enters
10 Aug 75	Sunday	Summer Term Ends
11 Aug 75	Monday	Transition Begins
13 Aug 75	Wednesday	Transition Ends; Fall Semester Begins
1 Sep 75	Monday	Holiday, Labor Day
13 Oct 75	Monday	Holiday, Columbus Day
27 Oct 75	Monday	Holiday, Veteran's Day
26 Nov 75	Wednesday	Thanksgiving Holiday Begins
30 Nov 75	Sunday	Thanksgiving Holiday Ends
15 Dec 75	Monday	Final Exams Begin
19 Dec 75	Friday	Fall Semester Ends; Christmas Leave Begins
4 Jan 76	Sunday	Christmas Leave Ends; Spring Semester Begins
16 Feb 76	Monday	Holiday, Washington's Birthday
19 Mar 76	Friday	Mid-Semester Holiday Begins
28 Mar 76	Sunday	Mid-Semester Holiday Ends
17 May 76	Monday	Final Exams Begin
22 May 76	Saturday	Final Exams End
30 May 76	Sunday	June Week Begins
31 May 76	Monday	Holiday, Memorial Day
2 Jun 76	Wednesday	Graduation Day; June Week Ends



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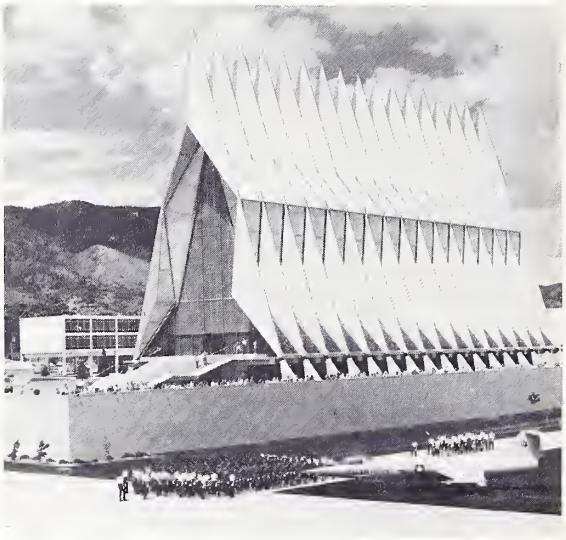
HISTORY

Pioneer Log Cabin, built in 1869, on the Academy site



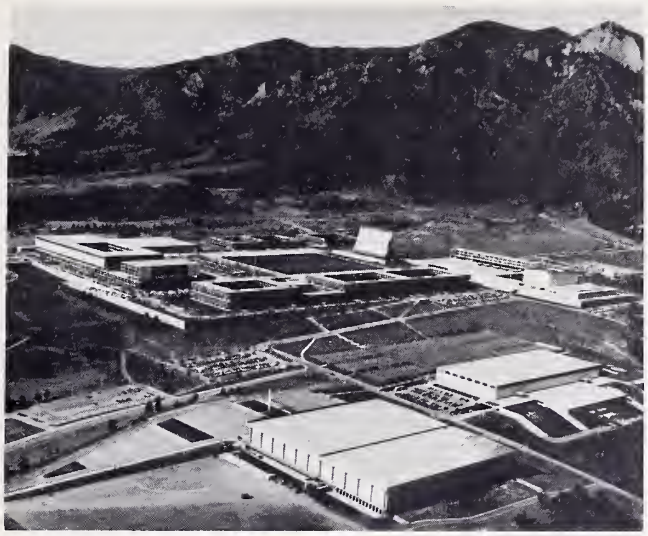
Cadet Chapel, dedicated in 1963, at the Air Force Academy

Our century has seen the birth and tremendous growth of American military aerospace power. The aviation pioneers of World War I prepared the way for the decisive role played in World War II by both tactical and strategic airpower. After the second war, our nation's leaders realized the growing importance of airpower to free-world defense, and in 1947 Congress established the United States Air Force as an independent branch of service.

The Air Force saw the need for an academy specifically designed to educate a nucleus of career officers for the new service. On April 1, 1954, Congress authorized establishment of the Air Force Academy and President Eisenhower signed the legislation.

The Secretary of the Air Force appointed a site selection committee, composed of prominent civilian and military leaders, to screen sites throughout the country to find an appropriate spot for the new academy. Pending the selection of a permanent site, a temporary location at Lowry Air Force Base in Denver was prepared to accept the first class. On July 11, 1955, the class of 306 cadets was sworn in and the Academy was dedicated.

An Academy staff member, who was asked by the selection committee to survey some areas in Colorado, spotted a large expanse of land just north of Colorado Springs that impressed him tremendously. He expressed his enthusiasm to the selection committee who arranged to inspect the location. They explored the land on horseback and then flew over the site with Charles A. Lindberg, a member of the committee, at the controls. They too were impressed with the site, located along the Rampart Range of the Rocky Mountains, with Pikes Peak towering in the background. They liked the scenic land formations divided into mesas and valleys with picturesque pine trees and rugged rocks. After screening numerous locations and visiting proposed sites in many states, the committee agreed on this unique site in Colorado.



The Cadet Area

The Eagle Statue

Lt. General Hubert R. Harmon was appointed by the President as the first Superintendent of the Academy. Under General Harmon's direction, the Academy staff designed a balanced program of academics, leadership, and athletics. With the goal of producing a well-rounded officer, the core curriculum combined courses in the basic and advanced sciences with those in the humanities and social sciences. Cadets were free to choose electives in their special fields of interest, giving the course of instruction added diversity.

While a cadet way of life, a tradition, and a curriculum were being formed at Lowry, work got underway in the fall of 1955 on one of the greatest construction projects in the nation's history. The cadet area was located atop a mesa, over 7,000 feet in altitude, appearing very high in the sky and remarkably appropriate as the school to prepare future leaders for the conquest of space. On August 29, 1958, cadets began to move into their new quarters, and on June 3, 1959, the Academy commissioned its first officers.

Since the first class graduated, the Cadet Wing has grown to over 4,000 members and they have now developed their own heritage. One of the landmarks of the Academy is the Eagle Statue in the cadet area with its inscription "Man's Flight Through Iife is Sustained by the Power of his Knowledge." Another is the "Bring Me Men" legend over the archway which the cadets march through to reach the parade ground. These few words from the poem "The Coming American" by Sam Walter Foss appropriately describe the type of young men the Academy desires to admit as cadets to prepare them for leadership in this vital era of expanding space horizons:

Bring me men to match my mountains
Bring me men to match my plains
Men with empires in their purpose
And new eras in their brains.

1. MITCHELL HALL (Cadet Dining Hall)
2. AERONAUTICS LABORATORY
3. FAIRCHILD HALL (Academic Building)
4. VANDENBERG HALL (Cadet Dormitory)
5. CADET GYMNASIUM
6. ARNOLD HALL (Cadet Social Center)
7. PLANETARIUM
8. HARMON HALL (Administration Building)
9. CADET CHAPEL
10. SOUTH DORMITORY
11. FIELD HOUSE

FACILITIES

THE Academy site encompasses 18,000 acres of former ranch land, divided into five mesas with valleys in between. This expanse of land allowed sufficient space for the flying training programs and for further expansion of the facilities to accommodate additional students.

Dominating the western side of the reservation are the majestic mountains with renowned Pikes Peak in the distance. The site adjoins the sweeping plains to the east. On all sides are spectacular scenes of nature to frame the modern campus. The cadet area, which is the main complex of the Academy, is constructed on the mesa or ridge at the north end of the site. The buildings are designed in contemporary architectural style featuring glass, aluminum, steel and white marble. Some buildings have been named for famous Air Force leaders.

VANDENBERG HALL, a cadet dormitory, has 1,320 rooms, squadron areas, hobby shops, and a cadet store. It was named in honor of General Hoyt S. Vandenberg, former Chief of Staff of the Air Force.

THE SOUTH DORMITORY, constructed as part of the expansion program to accommodate larger cadet classes, has 830 rooms.

FAIRCHILD HALL, the cadet academic building, contains classrooms, laboratories, lecture halls and faculty offices as well as a cadet dispensary and the Academy Library. It was named for General Muir S. Fairchild, pioneer of Air Force education. Near the academic building are an Aeronautics Laboratory and a Radio Frequency Systems Laboratory.

MITCHELL HALL, the cadet dining hall, accommodates all cadets at one sitting for meals. It was named for General Billy Mitchell, pioneer of military aviation.

ARNOLD HALL, the cadet social center, includes a ballroom, auditorium, bowling alley, recreation rooms, lounges and snack bar. It was named in honor of General Henry H. "Hap" Arnold, World War II Air Force leader.

HARMON HALL, the administration building, houses the offices of the Superintendent and his staff. It was named for Lt. General Hubert R. Harmon, first Superintendent of the Academy.

THE PLANETARIUM, containing a modern projector which displays the heavens, is used for cadet instruction and public showings.

THE CADET GYMNASIUM AND FIELD HOUSE contain facilities for intramural and intercollegiate sports. The gymnasium has two swimming pools (one olympic size) and many athletic courts and areas. The field house is a unique sports arena which has a multi-purpose area utilized for indoor track and practice of football and other sports; a 6,600-seat basketball court; and a 2,600-seat ice hockey arena.

THE CADET CHAPEL, focal point of the cadet area, is striking in its design with 17 towering spires which admit light to the Protestant chapel through colorful stained glass. Catholic and Jewish chapels and an All-Faith worship room are located on the lower floor level.

Located in areas south of the cadet complex are: the Academy Hospital which serves the cadets and other military personnel and dependents; the Officers Club and bachelor and visiting officers quarters; Douglas Valley and Pine Valley family housing areas with public schools; the Community Center shopping area for military personnel and families; the Academy Preparatory School; and a Supply and Services area to support the Academy.

A 3,500-foot airstrip, located on the southeast perimeter of the Academy, serves the lightplane, sailplane and parachuting activities of the Cadet Aviation Program. The airstrip is also used for flying activities by the Academy Aero Club and the Cadet Aviation Club.

Falcon Stadium and Eisenhower Golf Course, located east of the cadet area, were financed with private funds donated through the Air Force Academy Foundation. The Farish Memorial recreation area in the nearby mountains of the Rampart Range was donated to the Academy for cadets and Academy personnel.

THE ACADEMY'S PURPOSE

The Air Force Academy provides instruction and experience to each cadet so that he graduates with the knowledge and character essential to leadership and with the motivation to become a career officer in the United States Air Force.

THE purpose of the Academy is to prepare cadets to be professional officers in the United States Air Force. Because this purpose is vitally important to national security, the Academy must maintain strict discipline and control over all cadets.

If you become a cadet, you will be sworn into the Air Force soon after you arrive at the Academy. Your ability to live under military discipline will be tested during the next six weeks when you undergo a rigorous indoctrination to military life. This program, called Basic Cadet Training (BCT), is led by upperclassmen under the supervision of Air Force officers. The training is highly demanding, mentally and physically. It will continually challenge you and test your endurance. Some cadets do not prove equal to the challenge and the test. The ones who make it are usually well motivated for cadet life, having prepared in high school for the intense pressures of the first summer. If you successfully complete BCT, you will become a member of the Air Force Cadet Wing and begin the fall semester as a fourth class cadet.

Completing BCT is an accomplishment for which you can be justly proud, but the requirements for you as an Academy cadet are only beginning. Now you must concentrate your full attention on the education and training which is to continue for four years. You must abide by military rules that restrict your personal activities, and you must meet required standards of performance in all phases of the curriculum. Three major programs are included in the curriculum, as follows:

The leadership, military training, and aviation programs are a distinctive aspect of the Academy which serve as a foundation to build a professional career as an Air Force officer. Through class instruction, field training, and daily activities, you will gain insight into the operation of the Air Force and leadership responsibilities of an officer. You will start to develop leadership skills in your role as a follower during your first two years at the Academy. These skills will then be refined as you analyze yourself in leadership roles during your last two years. You will apply leadership skills to the Air Force flying mission through aviation training. Indoctrination flights, pilot or navigator orientation courses, and elective instruction will project you beyond the classroom and into the cockpit. Here you receive a glimpse of the career that lies ahead.

The academic program enables you to acquire the intellectual background for Air Force leadership. The curriculum includes a general education in the basic and engineering sciences, the social sciences, and the humanities, as well as specialization in a major of your choice. Courses in aeronautics, astronautics, and other sciences will apply to many Air Force requirements in this age of aerospace technology. Elective courses are offered if you wish to increase your knowledge of various subjects or to prepare for the possibility of graduate education in the future.

The physical education and athletic program involves all cadets in the development of physical fitness for leadership. You will learn a variety of skills with emphasis on combatives, aquatics, body development, and recreational sports. You will acquire techniques of participating and coaching in individual and team sports. You will compete in many intramural athletic contests, and if talented in a sport, you may play on an intercollegiate team representing the Academy.

The keynote of the entire curriculum is challenge, both mental and physical. The reason for these challenges is to develop superior officers for the Air Force — officers committed

to duty, honor, and service to country. By completing the four-year program, you will graduate with a Bachelor of Science degree and a commission in the Regular Air Force.

If you are physically qualified for flying, you will be expected to attend flying training during your first year in the Air Force. Following the completion of pilot or navigator training, you must remain on active duty in the Air Force for five years. If you are not qualified to fly, you will be assigned in a combat support area and must serve on active duty for five years following graduation from the Academy. After the experience of serving in the Air Force, a majority of the graduates have elected to remain for a professional career.

YOUR DECISION

The Academy wants to be frank with you about what to expect if you become a cadet. The transition from civilian to cadet life is not easy. Satisfying all phases of education and training through four years as a cadet calls for application, dedication, and sacrifice.

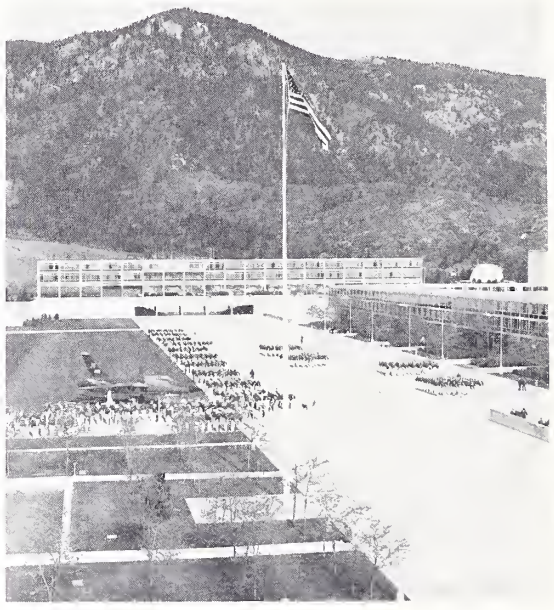
Before you make a decision about applying for the Academy, you should ask yourself this question, "Why am I interested in attending the Air Force Academy?" Your primary motivation for seeking an appointment is most important, so you should carefully examine your reasons. First, you should make sure the Academy is *your own* choice. Do not let your parents, your girl friend, or others influence your decision. The Academy has found that the influence of family and friends, no matter how well intentioned, seldom provides sufficient desire for a cadet to overcome all the problems he will encounter.

Be certain that you are not primarily motivated to gain the prestige of attending a service academy. Although an Academy cadet may be admired by his associates, cadet life from the inside looking out is not always glamorous. The fourth class (freshman) year is especially difficult. It is a year of development in a totally new environment. As a fourth classman you will have very little personal freedom and only a few privileges to be away from the Academy. As you progress through the years, you will have more privileges, but along with the increased freedom you will have more responsibilities of leadership in the Cadet Wing.

If your ambitions are chiefly directed toward civilian professions, you should not apply for the Academy. Some of those professions are journalism, sports, music, arts, ministry, medicine, and law. The Air Force Academy no longer has a pre-medical or a pre-law program since Congressional legislation directed that both be discontinued at the service academies.

Be sure that you do not seek an Academy appointment just to receive a four-year cadet scholarship. In return for the government's investment in your education and training, you will be expected to learn, to perform, to obey, and to lead. The Academy has an obligation to the Air Force, to the Congress, and to the American taxpayers to produce professional military officers. And you, in turn, have a responsibility to those groups to do your best.

If your primary motivation is to accept the challenges of the total Academy program and service in the Air Force, then you have passed the first test toward making a positive decision. Before making your final decision about applying for the Academy, you are advised to weigh all of your characteristics against the typical qualities of a successful cadet and an officer. If you enjoy responsibility and accept discipline, welcome new experiences and opportunities, and like to excel and lead others, you should have the attributes to become a successful cadet. And if you find satisfaction in serving others through a sense of duty and morality, you should also have the assets to serve your country as an officer. The decision is yours.



LEADERSHIP, MILITARY, AND AVIATION PROGRAMS

The leadership, military training, and aviation programs are directed by the Commandant of Cadets. The Deputy Commandant for Military Instruction and members of his staff plan and supervise these programs. The instruction is based on a four-year progression from a basic cadet without military experience to an Air Force officer with the knowledge, skills, and motivation for his profession.

Leadership is based on "the whole man" concept, meaning that many attributes of character, dedication, and professionalism are necessary to complement your academic education and complete your preparation for Air Force service. Fulfilling these high standards of performance, conduct, and military bearing are not easy. As you develop you will realize that worthwhile goals in life do not often come easy, but in the long run the rewards are usually worth the efforts. You realize, also, that your challenge of leadership could involve great responsibility in terms of national and international security.

During fall and spring semesters, you will have classroom instruction in military studies including special presentations by well known military and civilian leaders. You will be active in many types of summer military training which broaden your background. You are evaluated on your performance and interest in these training programs just as you are in academic courses. You receive ratings on aptitude for commissioned service and leadership which are an important part of your graduation requirements.

The mission of the Air Force is to fly and, when the government so directs, to fight in defense of the national interests. Since the total mission is based on flying, the aviation training you receive as a cadet is a significant part of your career preparation. Aviation programs give wide flexibility to develop any previous flying experience and allow beginners the stimulating experience of flying along with the chance to develop flying ability. Regardless of whether or not you are physically qualified to go on to flying training, you will have the opportunity to participate in several of the flying programs offered within the curriculum or on an extracurricular basis.

BASIC CADET TRAINING

Your first exposure to military life occurs in Basic Cadet Training, a rigorous program of orientation held during the summer you enter the Academy. Your performance and attitude in this program are critical factors in your future success at the Academy. Since it is vitally important for you to understand what is expected of you, a detailed description is given as follows:

Arrival

When you arrive at the Academy, you may be on your own for the first time, away from home. Although there are many others in your class you may not know anyone. You could suddenly feel alone in a strange new environment without parents or friends to turn to. But remember, you are not alone and almost everyone else feels the same way you do.

Processing

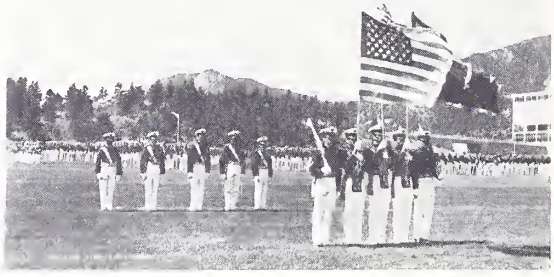
The first few days go by in a hurry because you are busy with clothing issue, forms, inoculations, validation exams, and squadron and dormitory room assignments. After a new haircut, everyone begins to look similar and the distinction is gone. In high school you were an athlete, a scholar, a "somebody." Now you are just another basic cadet, and you must prove your worth to your classmates, to the upperclassmen, to the officers, and most of all to yourself.

Oath

Taking the oath to enter the armed forces of the United States is one of the biggest decisions of your life so far. By this pledge of loyalty, you promise to support and defend the Constitution of the United States against all enemies and to discharge faithfully your duties as a cadet. The oath is a commitment to carry out national objectives established by civilian leaders in congressional and executive branches of government. You must be willing to abide by their policies in times of peace or war. If you have any reservations about taking the oath, you must resolve them in your own mind before accepting an appointment.

HONOR CODE

"We will not lie, steal, or cheat, nor tolerate among us anyone who does."



Honor Code

"We will not lie, steal, or cheat, nor tolerate among us anyone who does." You must live up to the high ideals of this Cadet Honor Code throughout your training. As a new cadet, you learn to guide your life by the principles of honesty and integrity. Your word is trusted, and you can trust explicitly the word of your fellow cadets. The Honor Code belongs to all cadets, and the cadets strictly enforce it. As you live under the code, you begin to realize its importance to your future in the Air Force.

Transition

After processing is completed, your transition to military life begins with six weeks of

Basic Cadet Training, commonly known as "BCT." Although you are officially a "Basic Cadet," you are traditionally called a "doolie," a name coined by the Academy's first entering class, the Class of 1959. First classmen (seniors) take charge of your summer training without delay. These cadets, who were put through the same strenuous program three years earlier, demand your best. From the moment they take charge and on through the summer, everything is a stiff challenge, highly competitive, and rapidly paced. The first day will tax your endurance and force you to find hidden reserves of energy to keep up. The difference between the Academy and a civilian college becomes clear as you feel the pressures placed upon you. Stress is created everywhere in the daily schedule by giving you many tasks to do and little time to accomplish them. All of this has a purpose: to involve you in a number of activities and teach you how to perform effectively in a minimum of time. If you are motivated to do your best, you will meet the challenges and reach new heights of performance and achievement.

BCT in the Cadet Area

One of the first things you learn is how to march and drill. You perform close order drill and the manual of arms, and you learn to march in military ceremonies and parades. Physical conditioning is a part of your daily training which includes exercises, running, swimming, and competitive sports. The physical exertion is strenuous and tiring. It will be easier if you prepared yourself through vigorous physical activity before you entered the Academy. The obstacle course is the supreme test of your physical fitness in which you extend the limits of your ability and build the confidence to face stress. You learn to run the obstacle course, racing against the clock, over, under, and around various barriers.

Your training is not limited to drill and conditioning, but continues even in your room and in the dining hall. You are out of bed by at least six in the morning, and you straighten your room before going to breakfast. You must arrange your belongings and make your bed in a standard way. During strict Saturday morning inspections, you stand at attention while upperclassmen meticulously check over your room and uniform. You learn to take pride in your personal appearance and the cleanliness of your area. You also learn to eat in a military environment. You remain at attention in front of your chair until seated. Then you are scrutinized by upperclassmen regarding your posture and table manners. Although you must follow the rules of conduct, you are allowed ample time to eat. And the food is good, maybe the best dining hall food you could find. It is served family style, but the "family" is very different from yours at home. All basic cadets and upperclassmen eat at the same time in one huge dining area.

In the evenings, you are still busy, studying basic hygiene, cadet rules and regulations, and other subjects. You must stand when an upperclassman or officer walks into your room and salute when he leaves. You must square corners when walking. You must report for shower formation and go through exercises and questions. Then you go to bed for eight hours.

BCT in Jack's Valley

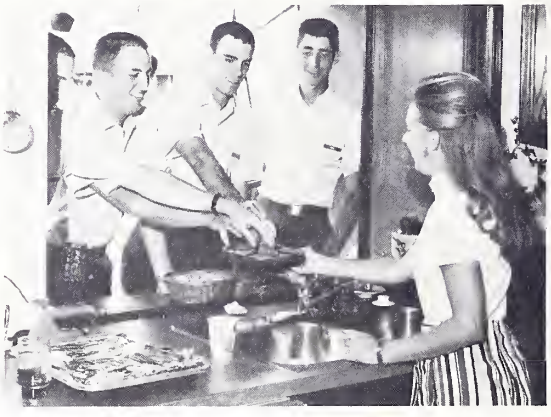
Jack's Valley, a wooded training area just north of the athletic fields, is deceptively quiet on first view. But during summer training, the valley resounds with shouts like, "How good are *you,* Mister? Now's the time to find out." From dawn to sundown upperclassmen put you through rugged training and confidence courses

under field conditions. You wear fatigue uniforms and combat boots, and you live in tents. Life in the valley is challenging and competitive, but you gain satisfaction as your endurance increases.

You develop teamwork in the leadership reaction course as small groups of basic cadets learn to solve problems and work together. Patrolling, land navigation, and tactical exercises simulate the operation of small units in combat. On the assault course you go through obstacles, bayonet drills, and basic hand-to-hand combat. You learn to fire the M-16 rifle and the .38 calibre revolver. The confidence course takes you through another series of obstacles. Teamwork and encouragement from classmates, along with your own pride and spirit, enable you to make it through this difficult course. In spite of your physical exhaustion at the end of the day, you find Jack's Valley is a different and stimulating experience.

Activities

Occasionally you get a break in the busy schedule. As a part of your introduction to the Academy's airmanship program, you will take a ride in a T-37 jet trainer. If this is your first chance to go up in an Air Force jet, you will never forget the experience. You will also experience a parasail ride, an exhilerating aviation sport. You will spend one day "Dining Out" in the home of an Air Force officer or noncommissioned officer. You will have dinner and get acquainted with a typical Air Force family. The tensions have been building over the summer, and here is a chance to relax and enjoy yourself.



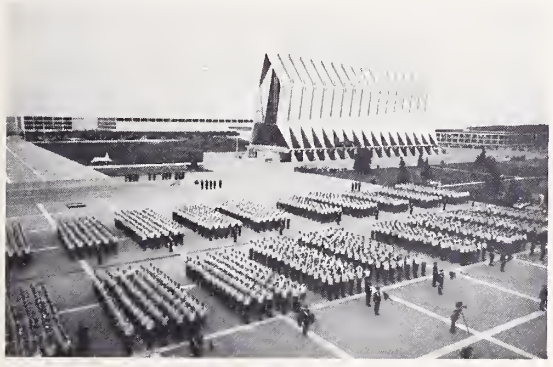
Field Day

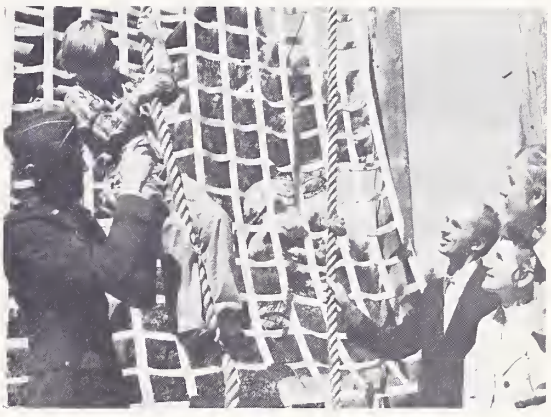
The final competition at the end of BCT occurs on Field Day. Now you are highly conditioned physically and will discover a sense of pride and self-esteem that you have not experienced before. You and your squadron teammates compete against the other BCT squadrons in events such as tug-of-war, log relays, distance races, and pushball. This gives

you a final chance to demonstrate your new confidence and progress, not only to the upperclassmen but to hundreds of spectators as well. It shows how well your squadron pulls together as a team to gain additional points toward winning the honor squadron competition. Winning at Field Day takes the same kind of spirit and teamwork that have carried you through the summer. To close the day's events, the cadet parachute team lands in the athletic area with a streamer for the flag of the winning squadron.

Acceptance Parade

After BCT when the rest of the Cadet Wing has returned from summer programs, you will receive your new shoulder boards during the Acceptance Parade. You are now officially accepted into the Cadet Wing. The upperclassmen are smiling, you notice, and they seem





human after all. Now you can appreciate them and the tasks they put you through during the summer. You have gained spirit, toughness, patience, pride, and teamwork. You are physically and mentally prepared for the challenges of your fourth class year.

Parents' Weekend

Over the Labor Day holiday, the Academy invites the parents of all fourth class cadets to visit their sons and attend scheduled functions. A special event of this weekend is a Cadet Wing Parade. The cadet squadrons also hold an open house and sponsor various activities.

LEADERSHIP AND MILITARY TRAINING

Fourth Class Year

In mid-August, you enter the fourth class academic year, consisting of fall and spring semesters. Military training during this year places you in the role of a follower as a necessary first step in your leadership development. In this role you are challenged both physically and mentally to increase your self-confidence and self-discipline. You are provided with a practical and useful perspective of leadership. This is the Functional Concept of Leadership in which you are given opportunities to analyze yourself and other cadets in leadership situations. This concept was introduced to you during BCT when you were asked to analyze your classmates. Now as a fourth classman, you will continue this practice by analyzing the performance of upperclassmen in leadership positions.

Your first military studies course helps you to understand the operation of the Air Force in support of national objectives and the responsibilities of the officer in accomplishing these goals. You study many aspects of leadership within the Air Force and the Cadet Wing, including the practical duties performed by the military manager. You gain an insight into the life of an officer and his career patterns, promotion opportunities, and pay benefits.

Third Class Year

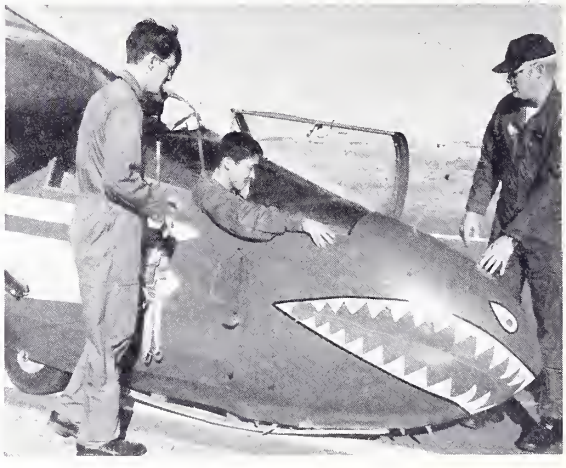
All cadets must take SERE (Survival, Evasion, Resistance and Escape) training during their third class summer. The training is conducted at the Academy and in the nearby Rocky Mountains. The course is fully accredited by the Air Force and fulfills the survival training requirements for Air Force personnel. In addition to SERE training, you must choose one of the following three-week programs:

Basic Airborne Training — Instruction and practice in basic skills of static line parachute jumping, given by the U. S. Army at Fort Benning, Georgia.

The Noncommissioned Officer Program — Service at Air Force installations to observe and gain a better understanding of the duties of enlisted personnel.

The Soaring Program — Instruction in ground school and dual and solo flights in Academy sailplanes.

During the academic year, you begin to leave the followership role and assume limited leadership positions in the Cadet Wing. You take a second course in military studies to assist you in accomplishing these duties and to prepare you for ever increasing responsibilities in



your second and first class years. The course focuses attention on developing communication skills which cadets and officers should possess to be effective leaders. You learn the techniques of teaching and speaking which will help you to communicate as a leader.

Second and First Class Years

Primary emphasis during the final two years is placed on increased leadership responsibility and practical knowledge of how the Air Force operates. You must assume at least one leadership position in a summer program for third or fourth classmen. You may participate in a three-week tour of duty with an Air Force unit. This tour, known as "Operation Third Lieutenant," allows you to observe and experience some of the duties of junior officers. In addition, you will select from several optional summer programs including the following:

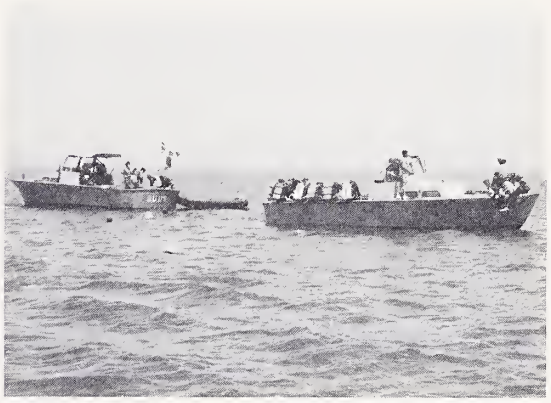
Parachuting — Offers the option of attending Basic Airborne Training at Fort Benning, if not selected during your third class summer, or of participating in free-fall parachuting programs at the Academy.

Soaring — Advanced programs are available to those who have completed the basic course during their third class summer.

Combat Leadership (RECONDO) — Instruction in the tactics of small element leadership conducted by the U. S. Army at nearby Fort Carson, Colorado.

Light Plane Flying — Required for all first classmen who will enter Air Force pilot training following graduation. Instruction is conducted in T-41 aircraft at the Academy Airfield. It includes dual and solo flight training with related ground school.

Underwater Demolition and Open Circuit Scuba Training — Instruction in scuba diving and underwater demolition tactics conducted by the U. S. Navy at San Diego. Satisfactory completion results in being certified world-wide scuba qualified.



In your second class academic year, you take a third military studies course which emphasizes the problems encountered by leaders of operational Air Force units and relates the applicability of these situations to the Cadet Wing. Information is included on current weapon systems and their employment in offensive and defensive airpower. The course is held in a workshop environment where each cadet is given an opportunity to make decisions governing the simulated tactical employment of operational units.

As the final step in the leadership program prior to your graduation and commissioning as an officer, you will take full responsibility for the leadership and training of the other three classes. The fourth military studies course, which pertains to the responsibilities and obligations of a junior officer, prepares you for your initial active duty assignment.

AVIATION PROGRAMS

Flying Introduction

Flying exposure begins during your initial days of Basic Cadet Training with an indoctrination flight designed to demonstrate the Air Force flight mission and equipment. During your third and second class years, you will receive flight line instruction, take jet flights in the local area, and go on a cross-country flight to an Air Force base. You may continue with jet trainer experience through a voluntary course offered to second and first classmen. This training gives you appreciation and understanding of aviation skills, aircrew responsibility, jet aircraft capabilities, local and cross-country procedures, instrument flying, and some actual cockpit experience.

Soaring Program

In your fourth class year, you will be given an orientation in soaring with several flights over the Academy. Future soaring training, held on a year-round basis, is available to selected cadet volunteers. The basic course culminates with the award of an FAA private glider license, and advanced training leads to a soaring instructor's license. All of the training is conducted in Academy sailplanes and supervised by Air Force pilot instructors. A majority of the instruction is given by cadets who are certified FAA soaring instructors.

Parachute Training

Parachute training is available at the Academy to selected cadets who volunteer. Those who are chosen must meet the stringent entrance requirements including eight pull-ups and a three-mile run in 24 minutes. The basic course, which involves seven free-fall jumps, trains you for an emergency ejection from a disabled aircraft. Selected cadets from the basic course will progress through the advanced courses to become parachute instructors. These cadet instructors have the opportunity to be members of the Academy's parachute team which has been highly successful in precision parachute competition. Air Force aircraft are used for parachute training with supervision provided by the airmanship staff. Most of the training is given by certified cadet jumpmasters who have completed the entire parachute program and have proved their capabilities.

Pilot Indoctrination

All physically qualified first class cadets who plan to enter Air Force undergraduate pilot training after graduation must complete a pilot indoctrination program. The flight instruction is given in the T-41 aircraft, a military

version of the Cessna 172. The instruction is conducted at the Academy Airfield by the 557th Flying Training Squadron of the Air Training Command. This training, including dual and solo flights, totals approximately 25 hours. Associated ground school courses are taught by the airmanship staff. If you qualify for this course, you will have your first chance to solo a powered aircraft which is a memorable achievement of your final year at the Academy.

Extracurricular Flying

If you want to pursue flying as a cadet extracurricular activity, you may take additional light plane training as a member of the Cadet Aviation Club. Through this activity you will have a chance to earn FAA ratings from private

pilot through instructor pilot. Flight training is available beginning the second semester of your fourth class year. Training is conducted in club aircraft which includes two Cessna 172s, a Beechcraft Sundowner, and two Grumman American Travelers. Instruction is given by both military and civilian personnel who are certified FAA flight instructors.

Cadet Balloon Club

If you would like to participate in an aviation activity that dates back to Leonardo de Vinci, you may join the Cadet Balloon Club which has two hot air balloons available for flights in the Academy area. You will learn the skills of unpowered flight in man's first flying machine. Club members may earn an FAA commercial instructor balloon rating.

Navigation Introduction

Courses in navigation and astronomy are open to cadets as electives regardless of physical qualification for flying. Navigation courses will further your knowledge and skills of the flight environment, and astronomy courses will expand your awareness of the space environment.

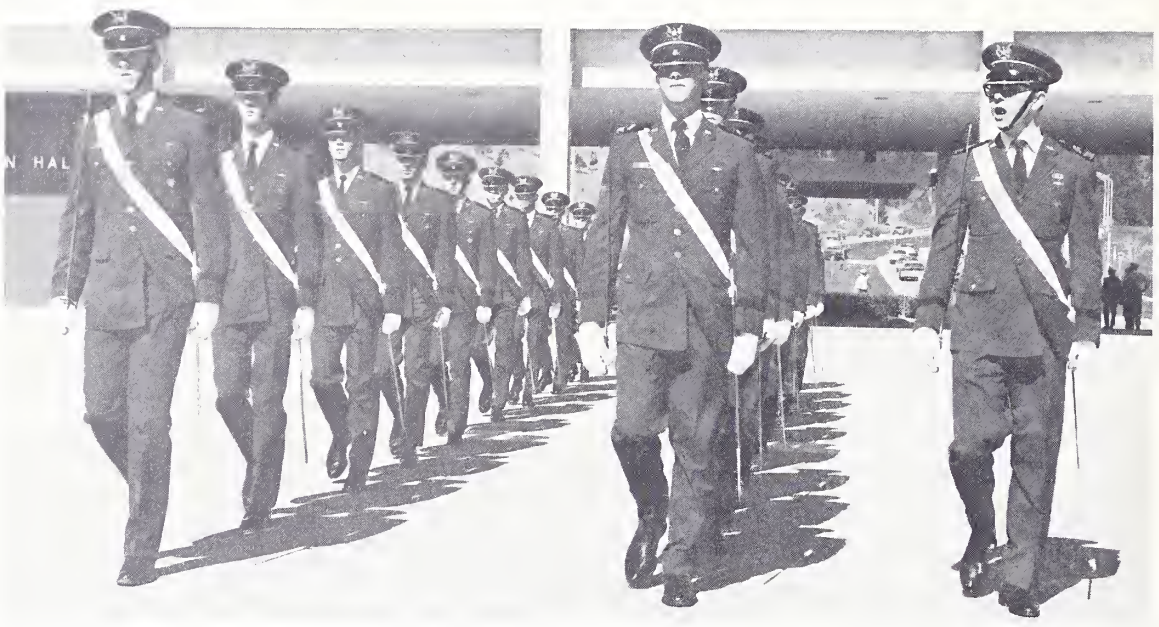
Basic and intermediate navigation courses enable you to learn flight concepts, instruments, and atmospheric factors in the classroom. This background is the basis for practical application in flight trainers and cockpit simulators. The skills achieved in the classroom and laboratory are then applied during flight missions in Air Force aircraft. The flight sorties are accomplished normally on regular academic days.

In addition, you will have some weekend training flights with visits to Air Force bases in order to receive firsthand exposure to various operational flying units and to become familiar with the equipment and aircraft. At those bases, you will have the opportunity to meet and talk with Academy graduates who are now members of flight crews. The navigation courses also enable you to study the avionics systems of current and future aircraft and to work with some of this equipment in flight. You may have the opportunity to achieve cadet instructor navigator status and provide instructional support to cadets in basic navigation courses.

Two astronomy courses provide an in-depth study of applied and descriptive astronomy. The courses include fundamental knowledge of the universe incorporating the latest findings of U. S. space explorations. The Academy Planetarium is used to portray the heavenly bodies and their relationships in space.

Some cadets do not meet the visual qualifications for pilot training, but do possess the visual requirements to attend Air Force undergraduate navigator training upon graduation. If you are physically qualified for navigator training, you will obtain the proper background by taking the navigator courses offered at the Academy. An advanced navigation course will introduce you to skills required in your future flying roles.

CADET LIFE



All aspects of cadet life add depth and meaning to the Academy and set it apart from civilian universities. Important features of cadet life are the military way you live, the leadership you demonstrate, the excellent facilities available to you, the comradeship you develop with other cadets, the unity and spirit you display, and the duty and honor you live by.

Your life is different from the average college student's in many ways. Your daily schedule is more exacting; your room and personal appearance must be immaculate; the pace you keep is more strenuous; your privileges and leaves are regulated; you cannot marry until after graduation; you cannot own an automobile until your first class year; and you have a limited pay allotment for personal expenditures. The intent of this arduous system is to produce a professional officer with the self-discipline to meet many challenges.

The Commandant of Cadets is responsible for supervision of most cadet life activities. These activities are administered by the Deputy Commandant for the Cadet Wing, who is assisted by Air Officers Commanding (AOCs) of the cadet groups and squadrons.

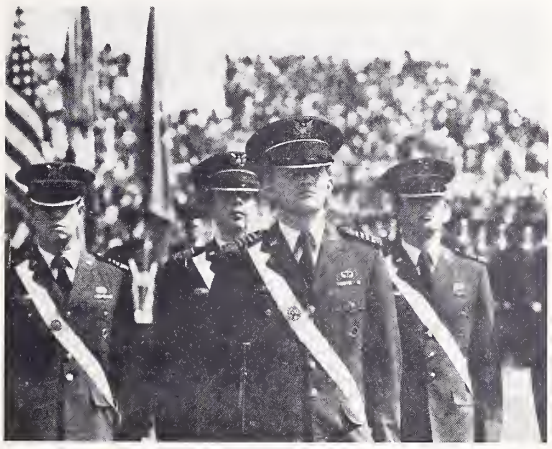
THE CADET WING

After you complete Basic Cadet Training, you are a member of the Air Force Academy Cadet Wing until graduation. When you are admitted to the wing, you are a fourth classman, equivalent to a freshman. In succeeding years, you will become a third classman (sophomore), a second classman (junior), and finally, a first classman (senior).

By public law, your commander in the Cadet Wing is the Commandant of Cadets, usually a Brigadier General. The Commandant grants authority for first class cadets to manage all units of the wing under the broad guidance of AOCs. The cadet organization consists of a Cadet Wing Commander and his staff, along with cadet commanders of groups, squadrons, and flights. The wing is organized into four groups, and each has ten squadrons.

The wing is similar to an operational unit in the Air Force and serves as a leadership laboratory for cadets. Command and staff functions of the wing give you a chance to manage a military organization. Upperclassmen in the wing gain leadership experiences by conducting the rigorous summer training programs for lower classes. These cadet cadres provide leadership through techniques of instruction, example, and participation. They are exposed to leadership authority, accountability, and performance.

First classmen are cadet officers in the wing. The wing commander and the group commanders are cadet colonels; the squadron commanders are cadet lieutenant colonels.



Cadet majors, captains, and lieutenants act as flight commanders and hold other operational and staff positions. Cadet noncommissioned officers (second classmen) are element leaders. As a fourth classman you will not hold rank. You begin leadership development by learning to follow the commands of upperclassmen.

Cadet Wing training is conducted on selected Saturday mornings for all cadets. A wide assortment of professional military subjects relevant to an Air Force career are included in this training which is required for graduation.

Within the structure of the wing, cadets may suggest changes of policy. New proposals are evaluated jointly by the Cadet Wing staff and the Commandant's staff of commissioned officers. As a military man, you must always remember, however, that rules and regulations sometimes run counter to individual desires. Although you may disagree with some policy, the Academy requires strict compliance on the part of all cadets. When there are practical benefits for both the Academy and the Cadet Wing, a policy or regulation can often be discussed and changed.

CADET HONOR CODE

"We will not lie, steal, or cheat, nor tolerate among us anyone who does." These simple words provide the basis for a personal code of ethics designed to serve the Academy graduate throughout a lifetime of service to his country. Each candidate must be prepared to accept the Honor Code when he enters the Academy. If you cannot accept the Honor Code in its entirety, you should not apply for nomination.

Immediately after entering the Academy, you will receive instruction in the Honor Code from elected cadet honor representatives of the first class. The instruction is given in an informal atmosphere where you are encouraged to ask questions and resolve any problems which might arise. After you are accepted into the Cadet Wing as a fourth classman, you must be prepared to live by the code.

The Honor Code is specific and clear in what it demands. You are expected to have complete integrity in both word and deed; you avoid quibbling or evasive statements; you do your own work in class. You are expected to report yourself for any Honor Code violation. You are also expected to confront any other cadet whom you believe has violated the code, or to assure that the incident is reported.

When you embrace this code, you are not setting an impossible standard for yourself. Adhering to the code will initially require self control and conscious effort on your part, but later this will become an ingrained habit and part of your total behavior. Although the code demands unqualified adherence, it does not

place you on your honor to obey all orders and regulations or to report infractions of them. The code is a basic moral document covering only substantial matters of honor and integrity. By its very wording, the code sets its own boundaries.

The Honor Code is administered by elected senior cadets who have studied the code in depth and observed its implications and enforcement. After a thorough investigation of a possible violation and a finding of guilty at a cadet honor hearing, a cadet can be asked to resign from the Academy. In all of the proceedings, every possible step is taken to protect the rights of the accused.

Complementing the Cadet Honor Committee is a Cadet Professional Ethics Committee which seeks to instill high standards of ethical conduct in members of the Cadet Wing. Esprit, responsibility, loyalty, and integrity all enter into the professional ethics which this committee represents.

Being administered by and for the cadets, the Honor Code is an integral part of the Cadet Wing. Cadets regard this code as a minimum standard. In practice it is the foundation for a larger ethical code which serves the individual both as a cadet and as a future officer. Academy graduates regard the experience of living under the Honor Code as a cherished possession which helps them cope with the complex problems that face a career officer in the Air Force. Considering such an objective the Cadet Honor Code is indeed the most important facet of cadet life.

CADET SCHEDULE

During the academic year (mid-August to late May), you will attend four fifty-minute classes or study periods each morning, followed by assembly for the noon meal formation. There are three periods of classes or study in the afternoon. Unless you participate in intercollegiate athletics, you will play on a squadron intramural team two afternoons a week after classes. The other three afternoons are spent in drill, extracurricular activities, or study. You may volunteer for additional academic instruction conducted during the hour prior to dinner. After dinner you are required to study in your room or in the library. You must be in your room and in bed at taps, unless you have special permission to study late.

Typical Daily Schedule

6:40 — Reveille
7:20 — Breakfast
8:00-11:50 — Classes or Study Periods
12:15 — Lunch Assembly
12:30-12:55 — Lunch
1:15- 4:05 — Classes or Study Periods
4:30- 6:20 — Intramurals/Drill/Study
7:20- 7:45 — Dinner
8:00-11:15 — Study Period
11:30 — Taps

This schedule is for Monday through Friday during the fall and spring semesters. Saturday mornings are devoted to parades, inpections, administration, and training. Saturday afternoons and Sundays are basically free.

LEAVES AND PRIVILEGES

You are not permitted to have visitors or leave the Academy when you are a basic cadet. As a fourth classman, you are allowed to have visitors on Saturday afternoons and evenings and on Sunday mornings and afternoons. Cadets who are placed on restriction, for violations of major regulations, are not allowed visitor privileges. On certain occasions you are permitted to dine out in the homes of Academy personnel. You will attend home football games and other scheduled events of the Cadet Wing. During the second semester, you may be allowed to leave the Academy on one or more weekends, but these privileges are limited.

When you become an upperclassman you will be allowed more freedom and privileges which will be gradually increased by class. As a third classman your privileges will still be limited, but when you become a first classman most weekends will be free if your performance is up to standard. When you have a weekend

pass, you will normally be allowed to remain away from the Academy from your last military duty Saturday morning until Sunday evening study time.

Individual cadets may receive greater or fewer privileges than their class quota, depending on individual achievement or deficiency. If you are not performing satisfactorily in military training or academic studies, your privileges may be restricted. If you are doing above average work in all respects, your privileges may be increased.

Most cadets go to Denver, Colorado Springs, or Rocky Mountain recreation areas during privilege periods. As a fourth, third, and second class cadet, you are not permitted to own an automobile, but may rent or borrow one for privileges if you desire. If you have a weekend pass, you are encouraged to use the Cadet Metropolitan Transit System, a bus route to and from Colorado Springs and Denver. As a first class cadet, you will be permitted to own a car and keep it at the Academy.

You will be granted approximately three weeks of leave each summer, except for your first summer as a basic cadet when you do not have leave. During each of your four years you will have approximately four days of leave for the Thanksgiving holidays, two weeks at Christmas, and one week during the spring. Emergency leave may be granted to you if an emergency involves a member of your immediate family. Other requests for special leave are considered on an individual basis.

COUNSELING AND ADVISING

During their first year at the Academy, some cadets have a difficult time making the adjustment from civilian to military life. At times during the entire four years, a cadet may have difficulty adjusting. If you should experience such problems, you will be encouraged to seek professional counseling. Many cadets have furthered their academic, military, or personal growth through professional assistance. The following personnel and organizations are involved in the Academy's total counseling program:

Air Officers Commanding (AOCs) are responsible for counseling cadets in their squadrons. In addition to his primary job as a counselor, the AOC acts as your advisor and father-confessor. He is there to assist you in adjusting to the cadet way of life. He will be the primary point of contact between your parents and the Academy. He will monitor your progress, motivation, and attitude. As a member of the Commandant's staff, he will supervise the discipline system within the squadron and will act in the best interests of the Air Force when decisions are required. He is assisted within the squadron by an Associate AOC. A squadron faculty officer is available to counsel you in academic areas and to assist you with problems of academic deficiency or probation. Any of these officers will be available whether you simply need someone to talk to, or whether you seek more complete consultation or guidance.

The Cadet Counseling Center is a full time counseling facility which closely parallels a typical counseling service. You will have access to the counselors and to the materials and facilities available at the center. Objectives of the center are to assist you in gaining maximum personal satisfaction from cadet life, attaining the highest degree of academic success in your courses, and making a meaningful career choice within the Air Force.

Cadet Officers play a major role in guiding you. They are responsible for most of the military training, academic tutoring, and athletic supervision within each squadron.

Academic Counseling and Scheduling advises you on course scheduling, majors programs, and scholarship opportunities.

Faculty Instructors are available to assist you in academic course work. They also help in selecting major fields and developing officer skills.

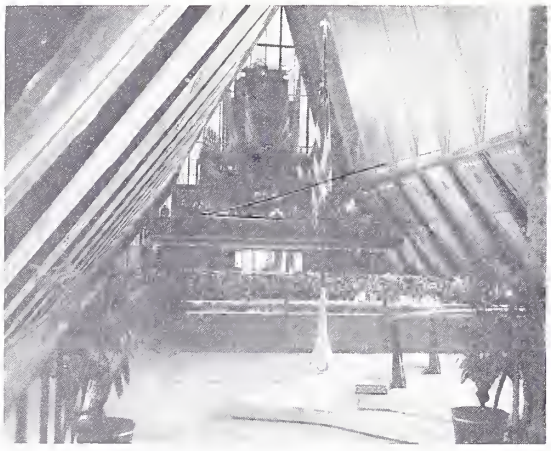
Cadet Chaplains offer counseling in personal, moral, and spiritual matters.

The Mental Health Clinic, under the Command Surgeon, offers complete psychiatric service.

RELIGIOUS PROGRAM

The Cadet Chapel is the center of religious activity for the Cadet Wing. This unique structure, with 17 aluminum spires towering 150 feet, serves as a symbol of the Air Force Academy to the public. The stained glass columns separating each of the spires color the chapel interior with ever-changing hues. The chapel contains Protestant, Catholic, and Jewish worship areas and an All-Faith worship room.

Since a military leader is responsible for upholding moral values among the men within his command, your participation in religious activities is encouraged to develop your leader-



ship potential as well as your individual spiritual growth. Participation is not required, and attendance at individual services is optional.

You may participate in any of the following activities: Sunday or Sabbath worship services, daily morning and evening services, special denominational services and activities, cadet choir membership, Bible classes, religious discussion groups, and weekend retreats. Many cadets volunteer to teach Sunday school classes in local religious education programs. There are several cadet fellowship organizations with a large number of cadets participating, both on and off the base.

Religious services are conducted by Air Force Chaplains who are regularly ordained clergymen. In addition to the scheduled religious activities, the chaplains offer individual pastoral care and cadet counseling services. Guest ministers and lecturers are featured at the services periodically. Attendance at church services in local communities is permitted when cadets are free from duty.

MEDICAL SERVICES

The Academy has excellent, convenient medical facilities. A cadet dispensary in Fairchild Hall provides out-patient treatment and physical examinations. A cadet dental clinic in the south dormitory provides complete dental care, including orthodontia. The Academy Hospital, about two miles from the cadet area, is fully equipped and staffed with physicians and specialists. If you must be hospitalized, your academic studies may continue through a special program between the hospital and the academic faculty. If medically able, you will receive academic instruction either at your bedside or in a classroom in the hospital.

CADET DORMITORIES

You will live in one of two very large dormitories, usually with a roommate. The dormitories have facilities for laundry and dry cleaning, a post office, a shoe repair shop, a tailor shop, and a barber shop. There are squadron recreation rooms and cadet activity rooms. Located in one of the dormitories is a cadet store which stocks clothing, personal items, academic supplies, electronic equipment, sporting goods, and gift items.

CADET DINING HALL

The cadet dining hall, containing more than two acres of unobstructed floor space, accommodates the entire Cadet Wing at one time. The dining hall, serving three meals a day, provides ample and nourishing food to sustain you in the vigorous programs of cadet activity.

One of the highlights of cadet life is the noon meal formation and the marching of the

entire Cadet Wing to the dining hall. Either the Cadet Drum and Bugle Corps or the Academy Band plays for the event, which is viewed by visitors from an overlook north of the Chapel.

CADET UNIFORMS

During the fall and spring semesters, cadets wear a class uniform of blue trousers and long or short sleeve blue shirt. This uniform is worn with a jacket in cool weather and with a parka in cold weather. The winter dress uniform is a blue coat and blue trousers. The mess dress uniforms, worn to social functions, are black trousers with black mess jacket for winter and white mess jacket for summer. The summer dress uniform for parades and ceremonies is a blue tunic and white trousers. Fatigue uniforms are worn during military training. Beginning in the spring semester of the fourth class year, you may wear civilian clothes when on leave or privileges.

CADET BENEFITS

You will receive your education, room, meals, and medical care at government expense. A monthly allotment adequately covers the cost of uniforms, books, supplies, and personal needs. You are prohibited from accepting any other grant or scholarship aid, unless the donor allows you to use the financial assistance for personal expense only. Your pay and allowance are considered sufficient for you to be self-supporting, provided you are economical. The pay is not sufficient to cover any debts contracted prior to entrance, to send money home to your parents, or to spend for luxury entertainment or expensive personal items. The money is carefully allocated monthly to cover your obligations with a modest amount left for personal spending.

Included in the cadet budget is a provision for saving $1,000. This amount is furnished to you upon graduation so that you may purchase uniforms and meet other initial expenses as an officer. Each class establishes a class contingency fund which is operated by a class treasurer. From this fund you may borrow interest-free money sufficient to cover any emergency situation.

Government-sponsored life insurance is provided at your option. You may obtain $5,000 to $20,000 coverage at $.85 per month per $5,000 coverage. A special commercial insurance plan is available to you on a voluntary basis. The plan provides $20,000 term life insurance for $3.50 per month, which is set aside from your monthly pay. This insurance policy may be carried forward upon graduation when you become a commissioned officer.

RECREATIONAL FACILITIES

Arnold Hall, the cadet social center, is a modern recreational complex which contains a variety of facilities. You and your guests may use these facilities when you have off-duty time. The 3,000-seat theater is used for movies, concerts, plays, special events, and appearances by nationally known entertainers, including contemporary stars who are popular among young people. Formal and informal cadet dances, receptions, and other social events are held in the large ballroom and two informal lounges. The center has a snack bar, a bowling alley, and rooms for television and games.

Functions are held in Arnold Hall on Friday and Saturday nights, evenings preceding holidays, and on other approved occasions.

The Academy provides two cadet recreational facilities surrounded by the natural beauty of the mountains. You and your guests may use these facilities when you have weekend privileges. The Lawrence Paul picnic area, located on a small lake within easy walking distance of the cadet area, is used for fishing, picnics and games. A cadet recreation lodge nearby has a snack bar, dining room, fireplace and dance floor. The Farish Memorial recreation area, situated on a lake in the mountains four miles west of the Academy, has accommodations for fishing, horseback riding, ice skating, boating, and barbecues.

The Field House and Cadet Gymnasium are available to enjoy during your leisure time. Adjoining these facilities are many outdoor playing fields for various activities. The beautiful Eisenhower Golf Course is available to all cadets who wish to play.

CADET ACTIVITIES

Life at the Academy offers a wide choice of approximately 75 activities which the cadets have originated and continued themselves on a voluntary participation basis. These activities enable you to develop your professional interests, creative talents, hobbies, and leadership potential. Organized cadet activities are as follows:

Cadet Wing Media

Contrails Staff — Responsible for publication of the "Contrails" handbook which serves as a record for the traditions and customs of the Cadet Wing as well as an orientation guide to the military service for each class.

Dodo Staff — Responsible for writing an informal cadet paper called "The Dodo."

Polaris Staff — Responsible for publication of the annual Cadet Wing yearbook "Polaris."

Talon Staff — Responsible for publication of the monthly cadet magazine "The Talon."

KAFA — Cadets operate a radio station to provide programs to Academy personnel.

Mission Support Activities

Big Brothers Club — Cadets act as Big Brothers to under-privileged children in Colorado Springs.

Bluebards (Dramatic Society) — Theatrical participation in two major dramatic productions each year.

CAFPOW (Cadet Aid for Prisoners of War) — Aid and support to local MIA families.

Cadet Chorale — Participation in group singing with appearances before the Cadet Wing and the public on special occasions.

Cadet Falconers — Cadets interested in falconry train and care for the Academy mascots and conduct demonstrations at athletic events.

Drum and Bugle Corps — Provides musical support for the Cadet Wing and community relations activities.

Interaction — Facilitates communication among cadets of diverse backgrounds, promotes external interaction to further cadet-community relationships, and creates a forum for expression of ideas conducive to social and cultural development.

Photography Club — Instruction in photography and photographic assistance to activities of the Cadet Wing.

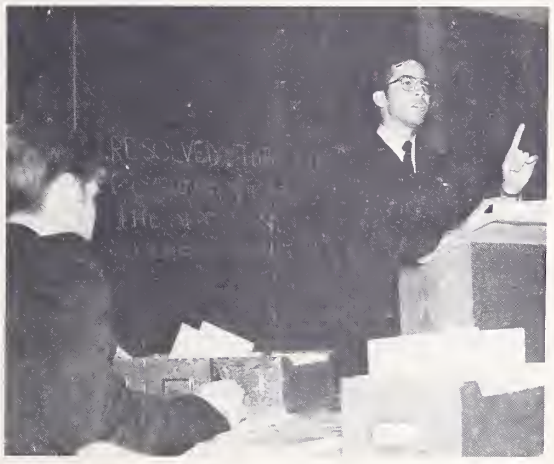
Scout Club — Assists local Boy Scouts in Scouting activities.

Representative Competitive Activities

Aviation Club — Provides an opportunity for cadets to obtain FAA ratings through flight instruction.

Balloon Club — Instruction and experience in the sport of ballooning.

Bowling Club — Instruction in bowling and participation in competition.



Forensic Association — Participation in intercollegiate forensic competition (debating, extemporaneous speech, oratory, discussion, and interpretive reading).

Handball Club — Non-varsity competition with regional or national teams.

Judo Club — Non-varsity competition with regional or national teams.

Model Engineering Club — Design, construction and operation of aircraft models, slot cars, railroads, and ships.

Parachute Team — Non-varsity competition with regional or national teams.

Rifle Drill Team — Fourth classmen comprise a drill team to enhance the image of the Cadet Wing.

Rugby Football Club — Non-varsity competition with regional or national teams.

Skeet Club — Non-varsity competition with regional or national teams.

Soaring Club — Non-varsity competition with regional or national teams.

Squash Club — Non-varsity competition with regional or national teams.

Professional Activities

American Institute of Aeronautics and Astronautics — Extracurricular engineering projects in the area of aeronautical sciences and rocket development.

Astronautics Club — Encourages cadets to participate and increase their knowledge in skills of astronautics engineering.

Astronomy Club — Provides opportunity for telescopic observation and photography of the moon, planets and stellar objects; comet and meteor tracking, telescope construction and astronomy research.

Biology Club—Research in the biological sciences.

Chemistry Club — Research in chemistry.

Civil Engineering Society — Extracurricular civil engineering projects.

Computer Science Club — Promotes increased knowledge in many phases of modern computing machinery.

Ecology Club — Promotes interest in ecology and environmental improvements.

Economics and Management Club — Economics discussion group with guest speakers.

Fine Arts — Provides cadets with the opportunity to learn and participate in the fine arts.

Foreign Language Club (Far Eastern Studies Group, French, German, Russian and Spanish) — Cadets further their interest in the history and culture of other nations through discussions, lectures and field trips.

Forum — Forum discussion with guest speakers and participation in intercollegiate student conferences.

Geography Club — Cadets further their interest in geography through research and field trips.

History Club — Research in history including field trips in the local area.

Institute of Electrical and Electronic Engineers — Extracurricular engineering projects in the area of elcctrical engineering.

Mathematics Club — Research in mathematics.

Mechanics Club — Research in mechanics.

Navigation Club — Promotes interest in navigation by providing research projects, field trips, and practical experience.

Physics Club — Research in physics.

Professional Studies Group — Fosters professionalism and career motivation through movies and lectures by distinguished military and civilian leaders, cadet squadron airpower rooms, field trips to local military installations, a professional library for research, and a publication, "Aerospace Newsletter."

Psychology Club — Cadets attend lectures and demonstrations in the field of psychology.

Recreational Activities

Amateur Radio Club — Furthers amateur radio interest and knowledge of military radio communications.

Archery Club — Instruction in archery and participation in competition.

Autosports Club — Stresses auto driving safety and participates in local gymkhanas.

Bridge Club — Instruction in bridge and participation in local tournaments.

Chess Club — Instruction in chess and participation in local tournaments.

Fishing Club — Fishing trips in the local area.

Hunting Club — Hunting trips in the local area.

Karate Club — Develops skills in the art of karate and provides competition with clubs in the local area.

Military Science Club — Increases the professional knowledge of the military officer.

Mountaineering Club — Mountain climbing activities.

Saddle Club — Provides facilities and opportunities for horseback riding.

Scale Model Club — Promotes competition and improvement in all phases of scale model building.

Scuba Club — Instruction and participation in scuba diving.

Ski Club — Instruction in skiing and trips to ski areas in the Rocky Mountain region.

Volleyball Club — Instruction in volleyball and participation in competition.

Weightlifting Club — Instruction in weightlifting and participation in competition.

Committees and Councils

The following committees and councils are designated to represent the interests of the Cadet Wing:

Automobile Committee — Representatives of the first and second class are elected to obtain and provide the second class information about the purchase of automobiles, loan arrangements, and limits.

Class Councils — Class representatives study special problems, as directed by the Commandant of Cadets or the Cadet Wing Commander, and prepare supporting reports.

Class Ring Committee — Representatives of the second class select the ring crest and assist the class in selection and purchase of the class ring. The ring is awarded during June Week of the second class year.

Ethics Committee — Expands the cadet's awareness of a need for application of professional ethics, improves personal and group standards, fosters a strong sense of duty and extends the high ideals of the Honor Code.

Fourth Class Training Committee — Second classmen from each cadet squadron develop a training program for the fourth class.

Heritage Committee — Representatives of all classes develop ideas for improving the environment in which cadets live, study and work to create interest in the Air Force and Academy Heritage.

Honor Committee — Instructs and indoctrinates cadets in the Cadet Honor Code. Rules on cases of possible honor violations.

Public Relations Committee — Promotes a closer relationship between the local communities and the Air Force Academy through the Cadet Speaker Program.

Wing Allied Arts Committee — Helps select the entertainment and cultural programs presented to the Cadet Wing.

Wing Entertainment Committee — Cadet Wing representatives advise the Allied Arts Advisory Board of stage performances desired by the Wing.

Wing Rally Committee — Representatives from each squadron plan pep rallies and halftime events at football games and other competitive sports.

SUMMARY OF THE CORE CURRICULUM

For the Class of 1979

In Semester Hours (SH) and in Course Units (CU)

4TH CLASS — FRESHMAN

Summer

Mil Tng 100	5 (SH)
Phy Ed 100	2
	7 (SH)

Fall & Spring

Chem 101-102	5½ (SH)	2 (CU)
English 111-112	5½	2
Geog 120	2½ or 3	1
For Lang 101-102	5½	2
Life Sci 210	2½ or 3	1
Math 121-122-123-124*	11	4
Mil Stu 121-122	2	0
Phy Ed 105-106	2	0
Phy Ed 120	1	0
Inst Tech 101-102	0	0
Armnshp 101	0	0
	38 (SH)	12 (CU)

2ND CLASS — JUNIOR

Summer

Mil Tng 300	5 (SH)

Fall & Spring

Aero 331-332	5½ (SH)	2 (CU)
Beh Sci 211	2½	1
Beh Sci 302	3	1
El Engr 331-332	5½	2
History 300 or Pol Sci 412	2½ or 3	1
Law 210	1½ or 2	1
Philos 210	1	0
Electives	16½	6
Mil Stu 321-322	2	0
Phy Ed 305-306	2	0
Phy Ed 320	1	0
	43½ (SH)	14 (CU)

*If remedial Math is required, Math sequence will be delayed.

3RD CLASS — SOPHOMORE

Summer

Mil Tng 200	2½ (SH)
Mil Tng 210	3
	5½ (SH)

Fall & Spring

Comp Sci 200	2½ or 3 (SH)	1 (CU)
Econ 211-212	5½	2
History 200/201-202	5½	2
Math 221-222	5½	2
Mech 120	2½ or 3	1
Physics 211-212	5½	2
Pol Sci 211-212	5½	2
Core Option	2½	1
Elective	3	1
Mil Stu 221-222	2	0
Phy Ed 205-206	2	0
Phy Ed 220	1	0
	43½ (SH)	14 (CU)

1ST CLASS — SENIOR

Summer

Mil Tng 400	5 (SH)

Fall & Spring

Astro 332	2½ or 3 (SH)	1 (CU)
English 430 or 450	2½ or 3	1
English 406 or Philos 440	2½ or 3	1
Law 400	2½ or 3	1
Electives	24½	9
Mil Stu 420	½	0
Phy Ed 405-406	2	0
Phy Ed 420	1	0
	39 (SH)	13 (CU)

TOTALS

Core Courses		
Academics	99 (SH)	36 (CU)
Physical Education	14	
Mil Stu/ Mil Tng	27	
Majors Courses	46½	17
Total Curriculum	186½ (SH)	53 (CU)

THE CURRICULUM

Semester Schedule

The yearly calendar of the Air Force Academy is based on Graduation Day. By agreement among the academies, graduation has been established as the 40th Wednesday after Labor Day, making it fall from 2 to 9 June. The academic year begins the day after graduation. It is divided into three sessions: a summer term, a fall semester, and a spring semester.

The summer term is approximately nine weeks long. Summer training programs begin immediately following graduation. The new cadet class enters the Academy on a Monday, which usually occurs the first week in July. The basic cadet summer training schedule consists of a few days of processing followed by a six-week training period.

The three upper classes receive leadership and military instruction at the Academy. Members of these classes may also be assigned to other military installations and designated locations for specialized training. All cadets except the new class receive approximately three weeks of leave during the summer.

The fall semester contains between 17 and 18 weeks of instruction, beginning approximately 15 August and ending approximately 20 December when Christmas leave begins. The spring semester contains between 20 and 21 weeks of instruction, beginning the first week in January at the end of Christmas leave and concluding on the Saturday before graduation. Each semester includes a final examination period of at least five days.

The academic week in the fall and spring semesters consists of five days, Monday through Friday, with seven 50-minute class periods. Saturday mornings are utilized for parades, inspections, precommissioning core curriculum training, and other events of the Cadet Wing.

Grading

The quality of your performance in a graded course is reported by means of letter grades. These grades denote character of work and are assigned grade points as follows:

Grade	*Character*	*Grade Points Per Semester Hour*
A	Excellent	4
B	Good	3
C	Satisfactory	2
D	Passing	1
F	Failing	0

Several courses, particularly Military Training, Airmanship and Physical Education, are graded on a P (Pass)/F (Fail) basis.

Additional letter grades of W (Withdrawn), WP or WF (Withdrawn while Passing or Failing, awarded after midsemester), N (No grade, continuing without penalty), and I (Incomplete) may be awarded.

Cadets are graded on quizzes, examinations and assignments prepared outside of class. For each 50-minute class period, you are normally expected to devote 100 minutes to outside preparation. You may be called upon to participate and recite any time you are in class.

A progress grade report is published at midsemester to inform you of your grades. Final grades and parents' grade reports are published at the end of each semester.

Cadet Achievement

Cadets are recognized for achievement in academic courses, military performance, and athletic participation as follows:

1. Cadets who excel in academic courses are placed on the Dean's List at the end of each fall and spring semester. Included are cadets whose grade-point average is at least 3.0.
2. Cadets who excel in military performance are placed on the Commandant's List at the end of each fall and spring semester. The list consists of the top 33⅓% in each class who have demonstrated the greatest cadet effectiveness.
3. Cadets who are on both the Dean's and Commandant's Lists are carried on the Superintendent's List denoting excellence in both academics and military performance.

If your name appears on either of these lists, you are recognized for this distinction by an insignia on the left breast pocket of your uniform. A small silver star denotes the Dean's List, a silver wreath signifies the Commandant's List, and a silver star enclosed in a silver wreath indicates the Superintendent's List. If you achieve one or more of these distinctions, you may be awarded additional privileges.

Athletic awards are presented at the annual awards banquet during June Week. Individual and team trophies are given to winners of intramural competition. Cadets receive letters and numerals to be worn on athletic jackets for their participation and achievement in intercollegiate competition. Special awards are given for outstanding performance in varsity sports.

Deficiency and Disenrollment

A cadet is deficient in his studies at midsemester report or the end of semester/term when he has a grade of F or I in one or more courses (graded or pass/fail), a cumulative or semester grade-point average (GPA) of less than 2.00, or a major's GPA less than 2.00 in his first class year.

Cadets deficient in studies will be reviewed by a class committee at each midsemester progress report and the end of each semester/term. The class committee will take final action on all cadets whose sole deficiency is one or more I grades obtained through no fault of their own, such as physical injury or sickness. Unless the class committee specifically states to the contrary, cadets deficient in studies will be placed on academic probation.

At the end of each semester or term the class committee will recommend to the Academy Board that a cadet who is deficient in studies be disenrolled for academic deficiency. Exceptions are made if the committee determines that both a cadet's overall performance and the probability of his successfully completing the academic program justify his retention. The Academy Board will consider the recommendation of the class committee and make final decisions.

Cadets retained by the Academy Board may be directed to accomplish one or more of the following: repeat or take a specific course during a subsequent semester, underload one course, change academic majors, attend a summer term in place of leave, be turned back to the next succeeding class, or take any other action deemed appropriate.

A cadet whose conduct or aptitude for commissioned service reflects doubt upon his willingness or ability to meet Academy standards will be placed on conduct or aptitude probation by the Commandant of Cadets. In cases involving gross misconduct, or when a cadet fails to meet the terms of his probation, the Commandant will refer the case to a Commandant's Board where the cadet must show cause why he should not be disenrolled from his appointment for deficiency in either conduct or aptitude. A cadet found deficient in these areas will be recommended to the Academy Board for separation. The Academy Board will consider the recommendation and inform the cadet of its decision.

Graduation Requirements

To graduate from the Air Force Academy you must achieve the following:

- Demonstrate an aptitude for commissioned service and leadership.
- Be satisfactory in conduct.
- Be proficient in physical education and military training.
- Complete the requirements for the core curriculum and for an academic major, passing all courses (or equivalents) for the core and for the major.
- Meet a minimum standard of a cumulative overall grade point average of 2.0 (C) and a cumulative grade point average of 2.0 in your major.

The core and major's requirements amount to fifty-three course units. Course units are used in place of semester hours to determine a cadet's minimum load for each semester.

ACADEMIC PROGRAM

The academic program, under the direction of the Dean of the Faculty, allows you to acquire a broad education in the basic and engineering sciences and the social sciences and humanities. You will be required to complete a balanced sequence of prescribed courses in all of those areas. You must choose a major in one area and fulfill the requirements for a degree. Elective enrichment courses are offered to cadets who have the talents and interests to pursue further study.

The total academic curriculum is designed to develop future Air Force officers whose minds are innovative, analytical, and resourceful. Classroom instruction encourages you to communicate and express your ideas, thereby developing the intellectual traits of leadership. The enrichment program encourages you to develop your full academic potential and to acquire a background for possible graduate education during your future career.

After you complete basic cadet training, you will be enrolled in academic classes as a fourth classman. The same expectations of achievement and performance required of you during the summer training are carried over into academics. You must learn to budget your time and study regularly in order to accomplish the academic workload, which will seem extensive in comparison to your previous requirements in high school.

The curriculum of 186½ semester hours, including core courses and majors, is greater than the requirements of a civilian university.

Academic courses are required during each fall and spring semester. Course descriptions and majors programs are included in the catalog appendix.

Academic Core Courses

During your fourth and third class years, you will concentrate on prescribed core courses. To balance fall and spring enrollments various core sequences are employed. The standard sequence required of most cadets is shown in the following column. Cadets with advanced standing will take some courses ahead of schedule.

FOURTH CLASS YEAR

Fall	*Spring*
Chem 101	Chem 102
English 111	English 112
For Lang 101	For Lang 102
Math 121-122	Math 123-124
Geog 120	Life Sci 210

THIRD CLASS YEAR

Econ 211	Econ 212
History 201	History 202
Pol Sci 211	Pol Sci 212
Math 221	Math 222
Physics 211	Physics 212
Mech 120	Comp Sci 200
Core Option	Option

SECOND CLASS YEAR

Aero 331	Aero 332
El Engr 331	El Engr 332
Beh Sci 211	Beh Sci 302
Law 210 — Philos 210	History 300/ Pol Sci 412
Option	Option
Option	Option
Option	Option

FIRST CLASS YEAR

English 430/450	English 406/ Philos 440
Astro 332	Law 400
Option	Option
Option	Option
Option	Option
Option	Option
Option	Option

Academic Majors

After spending two years taking a diversity of core courses, you will be prepared to select a major that suits your interests and aptitudes. Faculty advisors will explain the requirements of all majors. You may consult with an advisor and request assistance in choosing your major. You must make a selection before registering for the fall semester of your second class year. Most cadets, especially those who select science and engineering majors, will choose earlier. When you make a selection, you will be assigned an advisor to assist you in planning a course program for future semesters. You will take the remaining core courses along with those required for your major.

The following majors and minor are offered:

MAJORS

Science and Engineering

- Aeronautical Engineering
- Astronautical Engineering
- Basic Sciences
- Chemistry
- Civil Engineering
- Computer Science
- Electrical Engineering
- Engineering Mechanics
- Engineering Sciences
- General Engineering
- Life Sciences
- Mathematics
- Physics

Social Sciences and Humanities

- Behavioral Sciences
- Economics
- Geography
- History
- Humanities
- International Affairs
- Management

Interdivisional

- General Studies

MINOR

- Atmospheric Sciences (with Basic Sciences major or Physics major)

The Enrichment Program

Through the enrichment program, cadets may be placed in courses according to their individual ability, preparation and achievement. You are encouraged to participate in this program in any or all of the following ways:

Transfer Credit

Credit may be awarded for any college course satisfactorily completed which is equivalent to a course in the Academy curriculum. This allows you to substitute other courses for those omitted through transfer credit.

Validation

Special competence may have been gained through honors courses in high school, through College Board advanced placement tests or other experience that will enable you to complete validation examinations to satisfy the requirements for comparable Academy courses. You may choose a substitute elective for a course satisfactorily validated.

Acceleration

If you have special preparation or above average ability in a subject, you may be placed in accelerated courses which complete the requirements for a two-course sequence in one semester. Such courses are currently offered in chemistry and foreign languages.

Advanced Placement

Cadets who have special preparation or above average ability may also be placed in an advanced course of a multi-course sequence. Upon successful completion of the advanced course, you receive validation credit for prior courses in the sequence. Such placement is currently accomplished in core mathematics courses.

Substitution

Advanced course versions are offered as substitutes for some of the prescribed courses. They allow you to concentrate on a subject in greater depth or to satisfy requirements for a particular major.

Overload

Cadets who maintain a 2.60 grade point average may enroll in one course beyond the normal semester requirement. Cadets who maintain a 3.25 grade point average may enroll in two courses beyond the normal semester requirement. This allows you to have a wider latitude in your course selection.

Honors Courses

Many departments offer honors versions of core courses to selected cadets who volunteer. Course material is studied in greater depth than in the regular sections. Special notation is made on the transcripts of cadets who participate in honors courses.

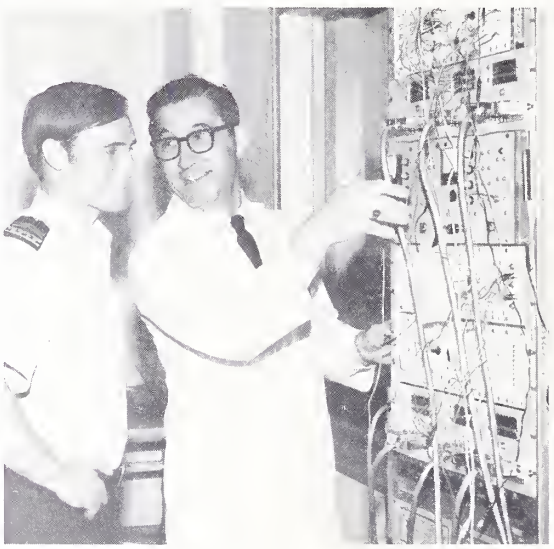
Audit

First and second class cadets who maintain a 2.60 grade point average may audit one course beyond the normal semester requirement. However, you may not take an overload course in addition to an audit course. Cadets who maintain a 3.25 grade point average may audit one course and overload another course. You are not required to take examinations in these courses. Audited courses will not appear on transcripts.

Because of federal statutes the enrichment program does not allow a cadet to graduate in less than four years. The program, on the other hand, does encourage you to take additional courses in your major field of interest, or take diverse elective courses.

Individual initiative is encouraged through the enrichment program. A course entitled Independent Study, consisting of research work by the cadet on a topic of his own choosing, is offered to upperclassmen by each academic department. Term papers and laboratory experiments provide other opportunities for cadets to engage in their own research.

Every effort is made to keep the content of courses up to date and abreast of current developments. To cover contemporary topics or provide special courses requested by cadets, each academic department may offer a course entitled Special Topics. The content of these courses may change from semester to semester and may cover a wide range of topics.



Foreign Exchange Programs

The Air Force Academy currently has an exchange program with France, affording selected cadets the opportunity to learn more about the organization, philosophy, and operation of the French Academy.

Each fall semester, not more than ten cadets from the Air Force Academy exchange places with cadets from the Ecole de l'Air (French Air Force Academy). The program includes student participation in the academic, military and athletic activities of the host academy for the semester.

Some reciprocal visits are also made to the academies of other allied countries. For example, during each spring semester, not more than ten cadets from the Escuela de Aviacion Militar (Argentine Air Force Academy) come to the Air Force Academy for approximately 30 days. Air Force cadets reciprocate by visiting the Argentine Academy during the summer.

Graduate Education

The Air Force encourages Academy graduates to continue their education by attending civilian graduate schools. This may be accomplished in several ways such as winning a scholarship, being selected to participate in the Honor Graduate Program, or being chosen by the Air Force Institute of Technology for further education. An expanded description of these programs is included in the Air Force Career chapter of this catalog.

Accreditation

The Air Force Academy is a fully accredited institution of higher learning. The standard Bachelor of Science degree is accredited by the North Central Association of Colleges and Secondary Schools. The Engineers' Council for Professional Development, composed of representatives of the major professional engineering societies, has granted accreditation to the majors in Aeronautical Engineering, Astronautical Engineering, Civil Engineering, Electrical Engineering, Engineering Mechanics and Engineering Sciences. The Major in Chemistry fulfills the recommendations of the Committee on Professional Training of the American Chemical Society. Cadets who complete the requirements for one of these majors will earn a specified degree: for example, Bachelor of Science in Chemistry. Although a cadet may earn more than one major, he is awarded only one degree.

The Faculty

Academic courses of study are taught by a faculty composed primarily of Air Force officers. A few officers from the United States Army, Navy, and Marine Corps, and from the military forces of allied nations serve in a liaison capacity. The military faculty is supplemented by noted visiting lecturers from civilian colleges and universities.

Faculty members are required to hold master's degrees in their fields, and many have earned doctorates. A number of colleges and universities in the United States, as well as some foreign institutions of higher education, are represented in the backgrounds of the Academy faculty.

Twenty-one permanent professor positions and the Dean of the Faculty have been established by law. The permanent professors usually serve as department heads. The other academic ranks are tenure professor,

tenure associate professor (on extended tours of duty), professor, associate professor, assistant professor, instructor, and lecturer.

Members of the Academy faculty have a responsibility beyond that of teaching their particular courses. They have an obligation to help furnish a continuing motivation for cadets to devote a career to the service of their country. They attempt to accomplish this goal through precept and example as career officers and qualified faculty members. In addition to maintaining close contact with the cadets in the classrooms and as course directors, faculty members serve as sponsors for their extracurricular activities.

Faculty members perform other functions such as participating in local and national meetings of educational and professional societies. Many of them have made contributions to the literature of their disciplines and to progress in their fields through research projects. During the summer, faculty members often serve other installations of the Air Force as consultants.

Personnel serving on the Academy faculty are listed in the appendix according to the faculty organization to which they are assigned.

An outline of the faculty organization is as follows:

Division of Basic Sciences

Department of Chemistry
Department of Mathematical Sciences
Department of Physics

Division of Engineering Sciences

Department of Aeronautics
Department of Astronautics and Computer Science
Department of Civil Engineering, Engineering Mechanics and Materials
Department of Electrical Engineering

Division of Humanities

Department of English and Fine Arts
Department of Foreign Languages
Department of History

Division of Social Sciences

Department of Economics, Geography and Management
Department of Law
Department of Life and Behavioral Sciences
Department of Political Science and Philosophy

Instructional Methods

Faculty members may employ the entire range of teaching techniques including lectures, discussions, demonstrations, tutorials and seminars. The small size of most Academy classes, usually 15 to 20 cadets, has made the discussion approach practical and popular. The classroom atmosphere is relaxed with free communication between the instructor and cadets. Extra instruction is provided for cadets who need assistance to develop their understanding of a subject and to improve their grades.

Academy prepared readings, notebooks, and laboratory guides as well as commercially published materials are used by the academic departments. Daily assignments, supplementary reading suggestions, and discussion questions are included in most of the materials.

Departments use a variety of testing techniques, ranging from essay questions and themes to short-answer and multiple-choice items. The nature of the subject matter determines the type of test used. Quizzes are given over class materials at the discretion of the

individual instructor. Most departments permit the instructor to construct tests for his own classes so that a portion of the final grade will come from measuring instruments devised with total freedom by the instructor. In preparing graded reviews and final examinations, most departments use a committee composed of several instructors.

Instructional Technology

The Directorate of Instructional Technology provides audiovisual materials and training devices to support instruction in all departments. Among the support resources are libraries of films, slides and photographs. Graphics services are available for preparation of instructional materials and displays used in classrooms and laboratories. Various mock-ups are manufactured for lab experiments and demonstrations.

A closed circuit television system supplements live classroom instruction. The TV system is equipped to televise up to twelve simultaneous programs to any area in the academic building. Instructors can prepare live or video-taped programs using several multiple production methods. Academic skills courses in reading improvement and typing, noncredit requirements for all fourth class cadets, are taught mainly by televised presentations.

Counseling and Scheduling

Administration of the curriculum is the responsibility of the Directorate of Counseling and Scheduling. The directorate prepares the academic calendar, publishes the curriculum handbook, conducts registration, designs the course offering timetable, produces academic schedules, assigns classrooms, and schedules final examinations.

The directorate administers the academic counseling system and monitors the progress of academically deficient cadets. Over 300 officers in the various academic departments serve as advisors to provide guidance to cadets in the selection of core courses and majors. They also counsel cadets who have academic deficiencies or have been placed on academic probation.

Classrooms and Laboratories

Cadet classrooms are located in Fairchild Hall, the large academic building. Most classrooms are designed to accommodate small class sessions to encourage discussion between students and instructors. Eight 40-man rooms and eight 76-man rooms are available when larger classrooms are appropriate to the instruction. These classrooms are in the shape of elongated horseshoes and tiered to provide maximum student-instructor contact. Five large lecture halls are available for assemblies of cadets and for meetings of staff and faculty members.

The Academy is well equipped with laboratories to supplement science and engineering classes. One of the most outstanding facilities is the Aeronautics Laboratory, housed in a separate building near Fairchild Hall. It is equipped with a subsonic wind tunnel, a supersonic wind tunnel, two shock tubes, and statically mounted jet and rocket engines. The Department of Aeronautics cosponsors, in conjunction with the Seiler Research Laboratory, the operation of a 17-inch diameter low density shock tube which is the largest device of its kind in the world. The device is used in studying shock induced phenomena, high speed and

high altitude instrumentation and certain astrogeophysical phenomena.

The Instrumentation Laboratory, in conjunction with NASA, is involved in studying the human cardiovascular system. Special instrumentation and techniques are developed to be used in measuring cardiovascular and circulatory parameters in the environment of both atmospheric and space flight.

A Radio Frequency Systems Laboratory is primarily concerned with instruction and research in radio systems and electromagnetic phenomena. The laboratory is equipped for experiments in guided electromagnetic waves, plane waves and radio communications. An antenna range on the laboratory roof is used for testing and developing various types of antennas.

The Academy Planetarium is a unique multimedia education and research facility used for cadet instruction in astronomy, navigation and related academic disciplines. The Planetarium, with a seating capacity of 300, is used for educational demonstrations to school groups and the general public. The projector enables the instructor to simulate a multitude of realistic sky effects on the 50-foot hemispherical star theatre. Movements of stars, planets, comets, meteors and satellites can be duplicated for past, present or future time.

The Academy Observatory, housing a 10-inch telescope, is used by cadets in the study of astronomy.

The Education and Research Computer Center houses a large digital computer supporting remote and batch processing of research and course programs in numerous assembly and higher level programming languages. This center supports every academic discipline and is used by nearly one-half of the Cadet Wing each year as well as several hundred faculty members conducting research.

The Academy has two Foreign Language Laboratories with accommodations for 49 men each. The student sits in a sound proof cubicle and responds to the instructor's statements on a tape recorder. By playing back the tapes, the student is able to critique his progress in the language.

Seiler Research Laboratory

The Frank J. Seiler Research Laboratory is one of three basic research laboratories operated by the United States Air Force. It is named in memory of the late Colonel Frank J. Seiler, an Air Force research pioneer. The mission of the laboratory is to conduct research in chemistry, aerospace mechanics, and applied mathematics. It also provides a means for fostering, encouraging, and supporting faculty and cadet research and disseminating the results to other Air Force agencies and the scientific community. A resident staff of research scientists works closely with faculty members and cadets on Air Force projects of mutual interest. A low-density shock tube, an inertial guidance laboratory and facilities for chemical synthesis and analyses are among the research equipment available for use by the laboratory staff, faculty, and cadets.

The Seiler Research Laboratory is assigned to the Air Force Systems Command, (AFSC). AFSC in turn sponsors Air Force Academy research programs. The laboratory coordinates the AFSC Summer Laboratory Program for faculty and cadets. Equipment and offices of the laboratory are located in the academic building of the Academy.

AIR FORCE ACADEMY LIBRARY

The primary mission of the Academy Library is to serve the academic, research and recreational reading needs of the Air Force Academy through the continual improvement, expansion and development of its services and resources. In recent years an important secondary mission of the library has evolved, and that is to house and maintain a growing collection of historical aeronautical materials. Recent donations of significant private collections to the Academy Library, such as those of the late Colonel Richard Gimbel and Richard Upjohn Light, have contributed to making the library's collection one of the most important resource centers for the history of flight.

The book and microfilm collection of the Academy Library is comprised of more than 395,000 volumes. Included in this number are subscriptions to more than 3,300 periodicals and 130 newspapers. Of the more than 190,000 titles in the collection of scientific and technical report literature, 175,000 titles are available on microfiche.

While the library's reference collection contains standard and specialized reference works in most subject areas, it also includes strong bibliographical collections for identification of research materials that are not held by the library. Such materials are normally obtained on interlibrary loan through use of the facilities of national and regional cooperating libraries and bibliographic centers.

Several specialized resource collections and facilities contribute to the excellent service that the library provides to the Academy community. Some of these are the current periodical and newspaper reading rooms, the reserve book room, the microfilm reading room, and the music listening rooms for individual and group listening. The audio collection contains more than 3,600 records and tapes of classical and contemporary music, drama, poetry, and oral history.

The special collections branch houses complete archival records on the establishment and growth of the Air Force Academy as well

as materials of historical significance regarding the growth and development of the U. S. Air Force. Some other essential resources are the collection of more than 60,000 government documents for which the library is a partial depository and the collection of the official records of the United Nations and documents of other international agencies.

A seating capacity for 850 readers is another outstanding feature of the library which is located at the north end of Fairchild Hall, the academic building. The library building, first occupied in 1959, is a very attractive, spacious, modern and well-organized facility. All book stack areas are open to library patrons to afford them complete access to all library materials.

The Academy Library administers four branch libraries to serve specialized needs of the entire Air Force Academy community: a Medical Library and a Patients' Library located in the Academy Hospital; the Law Library used both by cadets in their study of law and by military staff lawyers; and the Community Library equivalent to an Air Force base library. Forty-four smaller reference collections are located in various academic departments and staff agencies throughout the Academy.

A staff of experienced and well-trained librarians provides reference and research assistance to cadets and faculty in the use of the library's resources. This assistance is available every day during the approximately 90 hours per week that the library is open. The professional staff compiles both selective bibliographies in many subject areas as well as listings of current acquisitions. They also conduct a complete orientation covering the library's collections, facilities, and services for all new cadets.

The principle of intellectual freedom is fully utilized in the library's development of collections to support the educational objectives of the Air Force Academy.

PHYSICAL EDUCATION AND ATHLETICS

The physical education and athletic program, conducted by the Director of Athletics, makes a vital contribution to your preparation for Air Force leadership. The purposes of the program are:

- To instill such attributes as skill, confidence, initiative and teamwork through competitive sports;
- To develop useful habits of physical fitness and conditioning;
- To develop courage, self control, and the ability to survive in emergencies;
- To acquire the athletic skills to instruct a variety of sports;
- To gain individual skills for enjoyment of sports after graduation.

The program involves instructional classes conducted by professional physical educators. The instruction expands each year until you perfect your physical coordination, timing, aggressiveness and techniques. You will learn to participate in many types of sports through intramural contests. You may try for intercollegiate teams which are nationally known in many areas of varsity athletics.

The Academy's athletic facilities are considered to be among the finest in the nation. The Cadet Gymnasium has three full-sized gyms; one Olympic swimming pool and another 40-yard pool; courts for squash, handball, tennis, volleyball and basketball; and a rifle and pistol range. The Field House has an ice rink, a basketball court with seating for 6,600 spectators, and an indoor tartan track with astro-turf infield for all-weather practice. There are 120 acres of outdoor playing fields.

PHYSICAL EDUCATION INSTRUCTION

Fourth Class Year

As a basic cadet you undergo a vigorous training program designed to develop your physical strength, endurance, agility, and coordination as well as a sense of teamwork and competition. You will take a physical fitness test and a swimming test which require remedial instruction if performance is unsatisfactory. The summer training includes a progressive series of conditioning exercises and runs, sports activities, and inter-squadron field day. This training prepares you for the strenuous physical education and intramural requirements of the academic year.

During the fall and spring semesters, you begin to learn the fundamentals of self-defense by taking boxing. Body development and coordination are stressed through instruction in gymnastics. Survival and recreation are emphasized in swimming classes. A classroom course in physical fitness methods presents sound principles related to diet and weight control, aerobic conditioning, and building of muscular strength and endurance.

Third Class Year

Instruction in lifesaving will add to your confidence and capabilities in hazardous situations requiring advanced aquatic skills. Carry-over skills to enhance fitness and recreation are accentuated during the remainder of the curriculum. You are instructed in badminton and two additional carry-over activities (tennis, golf, handball, or volleyball).

Second Class Year

Combatives instruction in judo emphasizes aggressiveness, self-confidence, and body development. Aquatic skills and self-confidence are further developed by a course in survival swimming. You are exposed to several situations which simulate aquatic disasters and emergencies which an Air Force officer may encounter. You receive instruction in two additional carry-over activities not taken during the third class year.

First Class Year

The progressive development of carry-over skills is continued with your choice of two electives from the following: advanced tennis, basic ice skating, advanced golf, basketball, diving, individual aerobics, and racquetball. In addition, you will take squash to add to your physical abilities and recreational enjoyment. To complete the instruction in self-defense, a course in unarmed combat exposes you to a multitude of potential hand-to-hand combative situations where you must react confidently, rapidly, and aggressively. Cadets who have not met minimum aquatic standards will receive additional swimming instruction.

INTRAMURAL PROGRAM

Intramurals are a vital part of the prescribed physical education program and cadet way of life. Participation provides you with continued physical development and broad experience in both team and individual sports. Only those cadets engaged in intercollegiate sports are excused from competing in intramural athletics. An intense amount of pride and will to win is generated as each squadron in the Cadet Wing is represented by a team in every sport. Competing during the fall, winter, and spring sports seasons, squadrons vie for the Malanaphy Trophy, presented at the end of the year to the best squadron in overall intramural performance. The intramural program, which is managed by cadets, serves as a laboratory for developing leadership. The cadets construct detailed administrative plans, coach teams, officiate contests, and solve the many problems of a large athletic structure.

The schedule of intramurals is as follows:

Fall — football, lacrosse, flickerball, and tennis, cross country
Winter — boxing, wrestling, water polo, handball, volleyball, and squash
Spring — rugby, basketball, swimming, team handball, soccer, and Cadet Wing open boxing championships

INTERCOLLEGIATE ATHLETICS

Intercollegiate athletics provide a source of competition for a large number of cadets to participate in individual or team sports against colleges and universities. The intense competition builds spirit and pride throughout the Cadet Wing.

Those individual cadets and Academy teams who have been recognized for outstanding achievements are provided the opportunity to compete in post-season bowl games and tournaments. Participation in such events reflects the competitive leadership traits desired in future military officers.

Eighteen intercollegiate sports are available to cadets:

Fall — football, cross-country, soccer, water polo
Winter — basketball, fencing, gymnastics, swimming, wrestling, ice hockey, indoor track, rifle, pistol
Spring — baseball, golf, tennis, track, lacrosse

The Academy's varsity teams compete with leading colleges and universities from all parts of the nation. The following 1975 football schedule is an example of the intersectional competition scheduled in all sports:

Home Games

Sep 27	UCLA
Oct 18	Notre Dame
Nov 1	Army
Nov 15	California
Nov 27	Wyoming

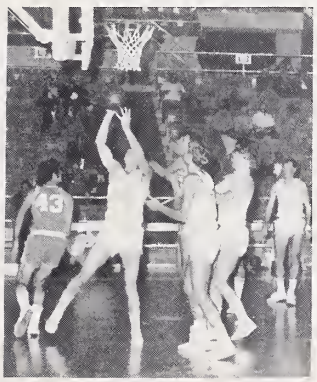
Away Games

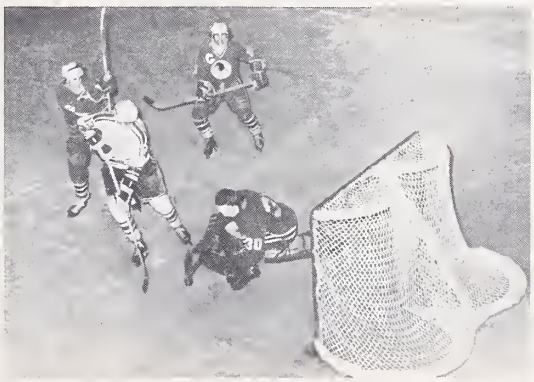
Sep 13	Arkansas
Sep 20	Iowa State
Oct 4	Navy
Oct 11	Brigham Young
Oct 25	Colorado State
Nov 8	Tulane

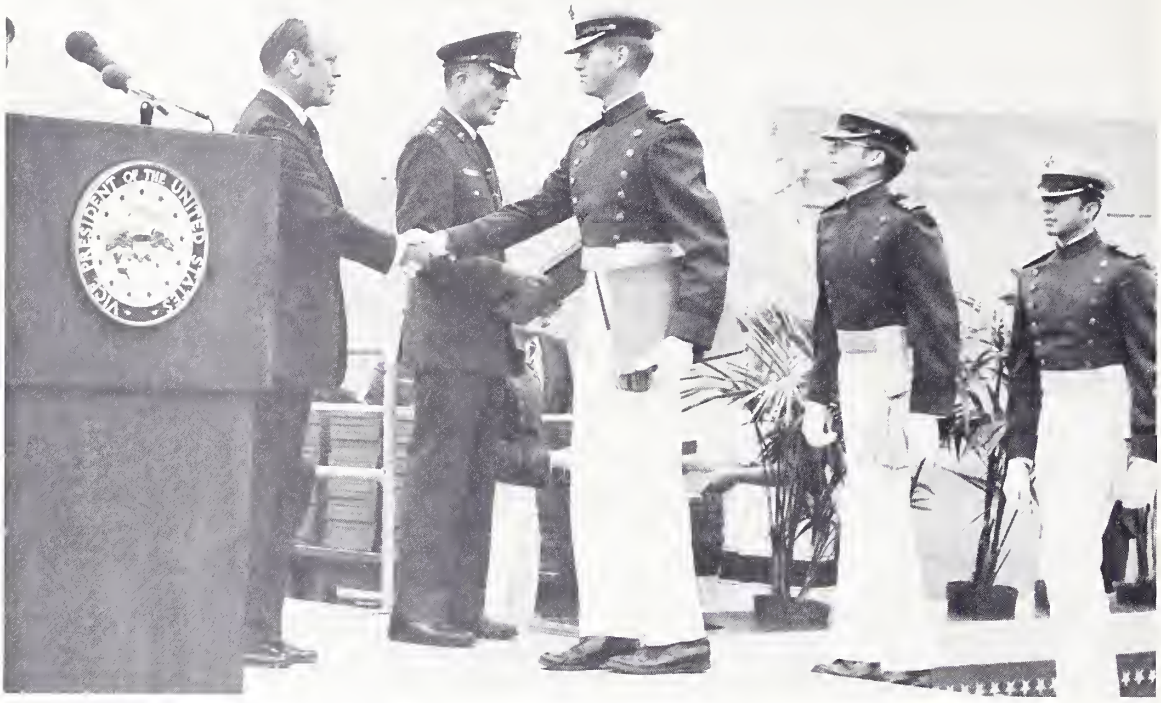
All home games are played in Falcon Stadium located on the site of the Air Force Academy. The Air Force Academy Foundation, an organization of national civic leaders, raised funds to construct the stadium which has a seating capacity of approximately 50,000.

The Academy's intercollegiate athletic teams are known as "The Falcons." The Class of 1959, the first graduating class, selected the Falcon as the Cadet Wing Mascot and named it "Mach I," the term indicating the speed of sound. The falcon was chosen because its characteristics in flight are symbolic of the mission of the Air Force. Cadet Falconers, a group of cadets who train the mascots to fly in pursuit of lure, perform demonstrations during halftime activities at football games.

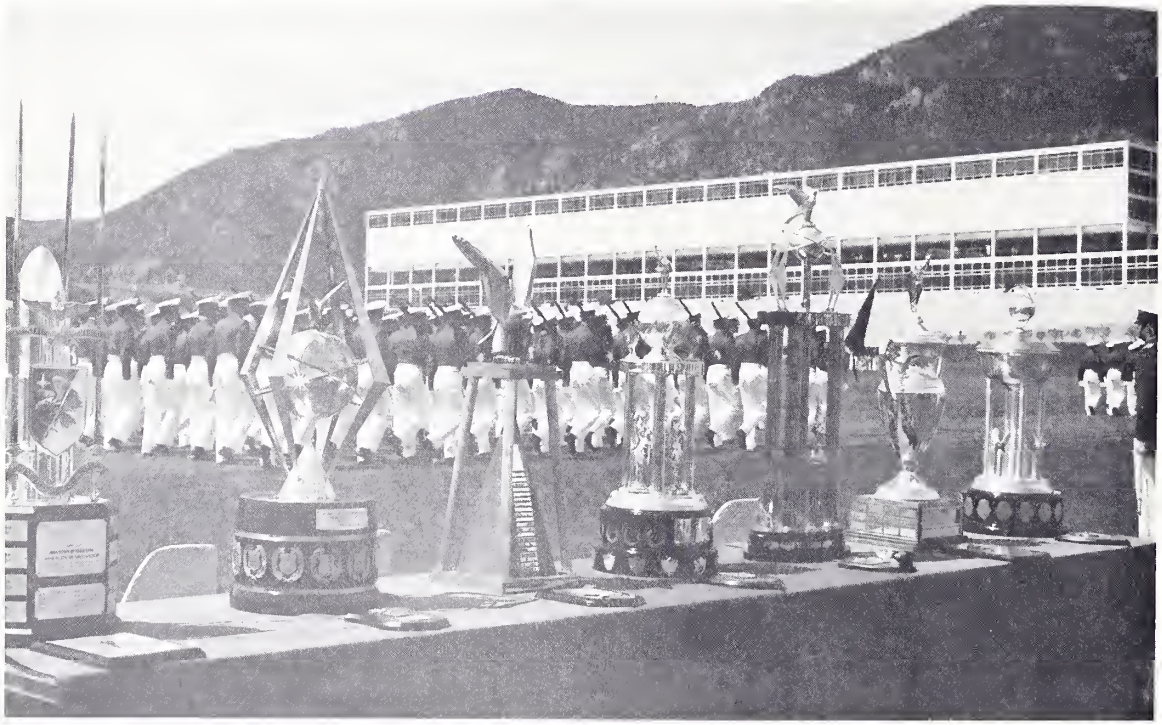
Intercollegiate athletics are financed primarily by the Air Force Academy Athletic Association, a self supporting and non-profit organization. The Athletic Association provides experienced coaching staffs and athletic equipment and maintains a central office at the Air Force Academy to handle the administrative details of intercollegiate athletics.







Graduation Ceremony



Awards Parade

JUNE WEEK AND GRADUATION

The final achievement of cadet life is the day of your graduation from the Air Force Academy. During the week prior to graduation, the Academy holds June Week activities honoring your class with parades and special events. June Week has a special significance for members of all classes. *To the fourth classman,* it means recognition and upperclass status. *To the third classman,* it means advancement to positions of greater responsibility in the Cadet Wing and increased privileges. *To the second classman,* it means advancing in rank and position, receiving his class ring, and having permission to own an automobile. *To the first classman,* it means the pride in completing four active years along with the excitement of graduation events.

One of the highlights of the week is the Awards Ceremony recognizing graduating cadets and squadrons that have achieved scholastic, military, and athletic honors. The trophies presented are sponsored by organizations and citizens who have had a vital interest in the Academy. Important social occasions are held for all cadet classes in the social center. The outstanding social function for the first class is the formal graduation banquet and the colorful ball.

June Week is climaxed by baccalaureate exercises, the graduation parade, and finally, the graduation exercises. Your family and friends, hopefully, will be present to see you graduate and to share your accomplishments with you. You will hear a distinguished guest speaker, receive your diploma for the Bachelor of Science degree, and take the oath of office for your commission in the Regular Air Force. The years you spent, which sometimes seemed long and difficult, may now appear short and memorable when viewed in retrospect.

Graduation will signify your completion of an extremely challenging task which tested your intellectual, physical, moral, and leadership abilities. Now that you have passed this supreme test, you are ready to serve your country and perform the duties of an officer for which you have been well prepared. You will report for duty after a vacation leave.

AIR FORCE CAREER

Officer Rank

When you graduate from the Air Force Academy, you will receive a commission as a second lieutenant in the Regular component of the United States Air Force. Under the agreement which you signed upon entering the Academy, you will have an obligation to serve as an officer in the Regular Air Force for five years. If you enter Air Force flying training when you graduate, you must serve for five years after completion of the training. Most graduates remain in the Air Force for a career.

Career Counseling

An extensive career information and counseling program is conducted to assist you in making a reasonable choice of your initial assignment and in formulating tentative long-range plans for your career. Outstanding officers from major Air Force organizations, representing the broad range of Air Force skills, meet with you to discuss career opportunities, flying and technical training, graduate education, and personal aspects of service life. Individual counseling is provided by the Cadet Career Information Office, your Air Officer Commanding, the Cadet Counseling Center, and other professional sources among Academy faculty and staff. The career discussions are particularly emphasized during your first and second class years so that you will have factual, current information concerning the Regular Air Force which you will soon enter as a professional officer.

Career Assignments

A great percentage of Academy graduates initially pursue a flying career. You may broaden your career horizons through qualification in flying skills. Holding an aeronautical rating will enable you to qualify for important staff and command responsibilities which require a flying background.

If medically qualified to fly, you will be expected to enter flying training, either pilot or navigator, following graduation. Flying training involves approximately one year of instruction at an Air Training Command base. For cadets who plan to enter flying training, the Academy conducts both pilot and navigator indoctrination programs. These programs enable you to validate some of the basic courses in undergraduate flying training. After completing the undergraduate training and earning your wings, you will be scheduled for advanced training. As a pilot, you will specialize either in fighter, bomber, or transport aircraft. As a navigator, you will specialize either in electronic warfare or radar bombing.

Following completion of flying training, you can expect to be assigned to a combat operational unit or mission support unit for approximately five years. As Air Force requirements permit, you may then assume duties in another career area. Later in your career, you ordinarily will alternate between jobs relating to your flying specialty and those pertaining to another career area. However; the mission of the Air Force is to fly, and you must anticipate that a significant portion of your Air Force career will be in assigned duties related to flying.

If you do not enter flying training, you will be assigned to a mission support career area. You will be allowed to specify your choice of a career area. Air Force requirements for personnel in that area, as well as your individual qualifications, will be taken into consideration when determining your initial assignment.

Graduate Education

Graduates who rank in the top 15 percent of their class are designated as Honor Graduates. Future advanced education will be provided for each Honor Graduate, provided he performs at a high level as an Air Force officer. Selection of graduates and scheduled attendance will be consistent with individual career development and Air Force assignment policies. Graduates usually will be selected after three

or four years in the service, and entry will not be later than eight years. Individual preferences for civilian graduate schools will be honored by the Air Force if possible. A graduate may apply for any degree program he is qualified to enter if the Air Force has a valid requirement for the specialty.

Cadets who have maintained outstanding grade averages may compete for distinguished graduate scholarships and fellowships. Included are the Rhodes Scholarships for advanced study at Oxford University, National Science Foundation Fellowships, and other selected national competitions. Academy graduates who receive advanced education through one of these awards may request flying training after completion of their graduate programs.

Career Benefits

Advancement in the Air Force is somewhat similar to advancement in a civilian occupation. It depends upon length of service, qualifications, and performance. The pay scale is established by Congressional law. The officer is paid according to his rank and his length of service within the rank.

As you progress in rank, your advancement will be based increasingly upon your personal merit and initiative. The Air Force is a vastly technological and far-reaching organization, yet one that recognizes the value of the individual. The Air Force puts a high premium on leaders with vision, dedication and ability. It offers a stimulating challenge and an interesting future in a wide spectrum of fields to Academy graduates who employ their leadership talents.

Normally, you will be assigned during your career to one or more of the armed forces schools for advanced professional studies. These include the Air Force schools at Maxwell Air Force Base, Alabama (Squadron Officers School, Command and Staff College, and Air War College) and the Department of Defense schools (Armed Forces Staff College, Industrial College of the Armed Forces, and National War College).

You may have additional opportunities for advanced education. Career officers in the ranks of lieutenant through lieutenant colonel are eligible to apply for further education through the Air Force Institute of Technology (AFIT) at civilian colleges and universities. Selected officers attend on a full-time basis, receive pay and allowances, have their tuition and fixed fees paid, and receive some reimbursement for books and thesis expenses.

If you become a pilot or navigator, you will receive flight pay in addition to base pay. Both are taxed by the federal government. You will receive a tax-free allowance for subsistence, and an allowance for living quarters when not occupying government housing.

During your career you may have duty assignments both in the United States and overseas. Each time you move, you will obtain reimbursement for transportation costs, an extra allowance for incidental expenses of moving, and free shipment of household goods. On an average, an officer will move to a new assignment every three to five years.

Additional benefits which you receive are: medical and hospital expenses; commissary and base exchange privileges; officers club privileges; VA and FHA mortgage loan insurance; group life insurance; 30 days' paid vacation each year.

The government provides for retirement at no expense to the officer. You may retire at 20 years of service at 50% of base pay. Benefits increase proportionately to 75% of base pay at a maximum of 30 years of service. You will contribute to Social Security and also receive those benefits.

A Regular officer in the armed services has excellent security prospects with stable employment, pay and benefits. The Academy is the Air Force's only program which provides a Regular commission upon graduation.

Career Obligations

A career in the United States Air Force entails certain obligations as well as benefits. You are expected to serve your country with

serious purpose and dedication. You may be assigned to various areas of the world considered vital to the maintenance of national or international security or important to the scientific and technological advancement of mankind. Some of the areas may be underdeveloped or remote where living conditions are below standards to which you have been accustomed. Your family may not be permitted to accompany you on certain assignments. Under all conditions you will be expected to give your best efforts and provide exemplary leadership for the men who serve under your command.

Association of Graduates

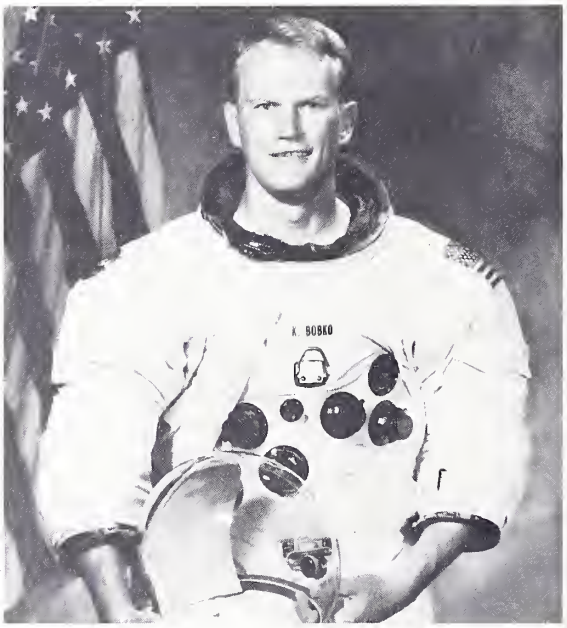
An Association of Graduates has been established at the Air Force Academy to maintain contact with the alumni. The purposes of the Association are as follows:

1. To promote interest and devotion to the Air Force Academy, its history, activities, and objectives;
2. To encourage worthy young men to apply for appointment to the Air Force Academy;
3. To foster fellowship among the graduates of the Air Force Academy in particular and among the United States armed forces officer corps in general;
4. To provide for continued professional development of the armed forces officer corps in support of the military profession;
5. To support other activities in the general interest of the Air Force Academy or the membership of the Association of Graduates.

The Association of Graduates maintains an Alumni Secretary within the Command Section of the Academy to create a central point of contact for all alumni matters. The Association is organized as a non-profit body under the management of an elected Board of Directors, with necessary operating funds collected in the form of yearly dues as well as gifts, donations and bequests.

Through the Class of 1974, the Academy has graduated 8,597 cadets since its beginning in 1955. The graduates have been successful in many career fields of the Air Force. A number have distinguished themselves for courage and accomplishment in the line of duty.

Two Academy graduates of the Class of 1967 who have returned to serve on the Academy staff are Captain Tom Cunningham, left, and Captain Fred Budinger, right.



Lt Colonel Karol Bobko, a graduate of the Class of 1959, is a NASA Astronaut with the Apollo Soyuz Test Project at the Lyndon B. Johnson Space Center in Houston.

AIR FORCE OFFICER CAREER AREAS*

Operations
- Pilot
- Navigator
- Air Traffic Control
- Weapons Director
- Missile Operations
- Space Systems
- Special Operations

Scientific and Development Engineering
- Weather
- Scientific
- Research and Development Management
- Development Engineering

System Program Management

Communications - Electronics

Computer Technology

Civil Engineering
- Civil Engineering
- Cartography

Logistics
- Missile Maintenance
- Aircraft Maintenance/Avionics
- Munitions
- Transportation
- Supply Services
- Fuels Management
- Supply Management
- Procurement Management
- Logistics Plans and Programs

Comptroller
- Financial
- Management Analysis

Personnel Resources Management
- Administration
- Personnel
- Manpower Management
- Education and Training

Audio - Visual

Information

Intelligence

Security Police

Special Investigations, and Counter Intelligence

International Politico-Military Affairs

Disaster Preparedness

*Only a portion of the career areas above will be available to Academy graduates for their initial assignments. In the Operations area, pilot and navigator fields will be open to graduates who are physically qualified for flying training. Graduates who do not enter flying training will be assigned to other career areas. Those areas available each year may vary, depending on the needs of the Air Force.

AUTHORIZED STRENGTH
of the
Air Force Academy Cadet Wing

Congressional legislation provides for an authorized strength of 4,544 cadets. The authorized appointments at maximum strength for each nominating category are shown below. Cumulative appointments are the total number available, of which approximately one-fourth will enter each year. The other appointments are filled annually.

SOURCE OF NOMINATION	*Authorized Appointments*
	(Cumulative)
100 United States Senators (5 each)	500
435 United States Representatives (5 each)	2,175
Vice President	5
District of Columbia	5
Puerto Rico	6
Canal Zone	1
American Samoa	1
Guam	1
Virgin Islands	1
Sons of Deceased or Disabled Veterans and Sons of Persons in a Missing Status (including POWs and MIAs)	65
Allied Students	
Republic of the Philippines	4
American Republics	20
	(Annual)
Presidential	100
Regular Components	85
Reserve Components	85
Honor Military and Naval Schools, AFROTC and AF Jr. ROTC	20
Sons of Medal of Honor Recipients	No Limit
Qualified Alternates	Number needed to fill the class

ADMISSIONS PROCEDURES

DEFINITIONS OF TERMS

Applicant — One who applies to a Member of Congress or other nominating authority requesting a nomination for appointment to the Air Force Academy.

Nominee — An applicant who has obtained a nomination in a category authorized by law.

Nomination — The naming of an applicant as a candidate by a nominating authority.

Candidate — A nominee whose name has been recorded by the Associate Director of Admissions as being eligible to compete for an appointment.

Appointee — A qualified candidate who has been selected for admission.

Appointment — An offer of admission to a fully qualified candidate to one of the authorized vacancies.

Cadet — An appointee who has been admitted to the Academy and has taken the oath of allegiance.

GUIDE TO APPLICANTS

You should carefully read the admissions information in this chapter. The following is a summary of the steps you must take during the admissions process:

1. Check the eligibility requirements to see if you qualify for a nomination.
2. During the spring of your junior year in high school, request a Precandidate Questionnaire from the Academy. Complete the questionnaire and return it.
3. Apply to both of your Senators and to your Congressional Representative requesting a nomination to the Academy.
4. Study the criteria for the other nominating categories and apply if you are eligible.
5. Register for and take the College Board Admissions Testing Program (ATP) or the American College Testing Program (ACT).
6. Complete the Medical Examination as scheduled by the Department of Defense Medical Examination Review Board.
7. Complete the Physical Aptitude Examination as scheduled by the Academy Admissions Office.
8. Insure that all forms received with your candidate instructions are completed and returned promptly to the Admissions Office.
9. See your Air Force Academy Liaison Officer whose name and address will be in your candidate kit.

Highly qualified candidates who have completed all requirements will be considered for selection beginning in December. All candidates will be notified of their qualification status by 1 May.

If you do not receive an appointment to the Academy, you may be invited to compete for the Air Force Academy Preparatory School. If you meet the admission criteria, you will receive a preparatory school application with your candidate status report. Information on the school is included in the Preparation Guidance chapter of the catalog.

ELIGIBILITY REQUIREMENTS

You must meet the general eligibility requirements specified by public law, as follows:

Age — You must be at least 17 and not have passed your 22nd birthday by 1 July of the year to be admitted.

Citizenship — You must be a male citizen of the United States. (Allied students authorized admission are exempt from the U. S. citizenship requirement.)

Marital Status — You must be unmarried. (Any cadet who marries will be discharged from the Academy.)

If you meet these requirements, then you may proceed to request a Precandidate Questionnaire, apply for a nomination, and complete the testing and other candidate requirements. Before you apply, you should determine that you have a desire to become a cadet and have an interest in serving as an Air Force officer. You should also decide that you are capable of competing for a cadet appointment on academic, medical and physical standards. The Preparation Guidance chapter of the catalog outlines a high school program to assist you in meeting the desired standards.

PRECANDIDATE EVALUATION

The Air Force Academy uses a precandidate system to evaluate the qualifications of applicants. The information is made available to members of Congress who participate in this system to assist them in identifying and screening their nominees. You should request a Precandidate Questionnaire from the Academy when you reach the second semester of your junior year in high school, or as soon as possible thereafter. *Do not request the questionnaire prior to your junior year second semester.* Send your request to the Admissions Liaison Office, USAF Academy, CO 80840. Complete the questionnaire and return it as soon as possible. You will receive a copy of the Academy Catalog to study as an admissions guide.

ASSISTANCE TO APPLICANTS

The Air Force Academy provides counseling assistance to individuals who are interested in obtaining a nomination to the Academy. The counseling is provided primarily by selected Air Force Reserve officers, not on active duty, who are located in all states. These officers are qualified to counsel you on all aspects of admission, and through their close contacts with officials at the Academy, are able to discuss most aspects of the four-year education and training of a cadet.

The counselors are known as Air Force Academy Liaison Officers (LOs). When you begin to plan and prepare for the Academy in high school, it would be advisable at that time to contact the LO nearest to you. You will be required to see an LO if you become an official candidate. You may be able to obtain your LO's name and address from the guidance counselor at your high school. If it is not available, you may request this information by writing to the Liaison Officer Coordinator (LOC) in your area. A list of LOCs is included in the catalog appendix.

The Liaison Officer Program is supervised by the Director of Admissions Liaison at the Air Force Academy.

NOMINATING CATEGORIES

You must obtain a nomination in a category authorized by law before you can be considered for a cadet appointment. To increase your chances of being selected, you should re-

quest a nomination in all the categories in which you are eligible to apply. Your applications should be submitted during the year preceding admission according to the specific dates given under each nominating category. Sample application formats are included in the catalog appendix.

If you applied for the Air Force Academy in a previous year, and failed to receive an appointment, you may become a candidate again by obtaining a new nomination. Before applying, make sure that you still meet the eligibility requirements.

The various nominating sources are explained below under the titles of Congressional Nominations, Other Nominating Authorities, and Competitive Categories.

Congressional Nominations

Any resident of one of the 50 states who meets the Academy eligibility requirements may apply for a Congressional nomination. You must submit your request directly to a Member of Congress representing you. United States Senators nominate from their respective states at large. Representatives in Congress nominate from their districts. You may apply to both of the United States Senators in your state and to the Representative of your Congressional district. Refer to the Congressional application format shown in the catalog appendix.

No political affiliation is necessary to apply for a nomination. Congressmen want to nominate outstanding individuals who will have a chance to qualify for an Air Force Academy appointment.

Since many Congressmen conduct interviews and tests before selecting their nominees, they prefer early applications. It is advisable to apply during the spring of your junior year in high school. Congressmen submit names of their nominees to the Academy any time between 1 May and 31 January for the class entering the following July. A majority of them will make their selections early in this period.

An applicant who is selected for nomination will receive a notice from his Congressman. The Admissions Office will send official notification of a nominee's candidacy after the Congressman has submitted his nomination to the Academy. A considerable period of time may occur between the applicant's request for nomination, the selection and notification of nominees by the Congressman, and the candidate notification and instructions from the Admissions Office.

Each Senator and Representative is authorized to have a maximum of five cadets attending the Academy at one time. For each cadet vacancy that occurs, the Congressman may nominate a maximum of ten candidates to be considered for the appointment. If the Congressman does not have a cadet vacancy available, he will not nominate candidates during that year. Three primary methods of nomination are available to Congressional members:

1. *Principal/Alternate* — The Congressman may nominate one principal candidate and nine alternates listed in the order of his preference. If the principal candidate is determined to be fully qualified on Academy admissions criteria, he will be offered the appointment. If he is disqualified, the appointment will be offered to the first designated alternate candidate who is qualified.
2. *Principal/Competitive Alternate* — The Congressman may nominate one principal candidate and nine alternates without designated preference. If the principal candidate is fully qualified, he will be offered the appointment. If he is disqualified, the appointment will be offered to the alternate candidate who has the highest qualifying score.
3. *Competitive* — The Congressman submits the names of all his candidates to the Academy for evaluation of their qualifications. The Academy ranks the candidates in order of their standing on all admissions criteria. The candidate who has the highest qualifying score will be offered the appointment.

Fully qualified candidates will have a chance to be selected for appointment even if they are not chosen to fill specific Congressional vacancies. These candidates will be considered as qualified alternates and chosen competitively to fill the available vacancies in that category.

Other Nominating Authorities

The same methods of nomination available to Members of Congress may be used by the following nominating authorities:

1. *Vice President* — The Vice President of the United States nominates candidates from the nation at large. Applications must be submitted to his office no later than 1 September. Refer to the Vice Presidential application format.
2. *District of Columbia* — The Delegate in Congress from the District of Columbia nominates from among the residents of the District.
3. *Panama Canal Zone* — The Governor of the Panama Canal Zone nominates from among the sons of civilians residing in the Canal Zone and sons of civilian personnel of the United States Government and the Panama Canal Company residing in the Republic of Panama.
4. *Commonwealth of Puerto Rico* — The Resident Commissioner nominates from among all the residents of Puerto Rico, and the Governor nominates natives of Puerto Rico.

The above nominating authorities must submit the names of their nominees to the Academy by 31 January. The Congressional application format can apply as a guide. The spring of the junior year in high school is the appropriate time to apply.

Competitive Categories

Appointments in the following competitive categories are awarded to the best qualified candidates within each group in order of merit.

1. *Presidential*

By law, vacancies allocated to the President of the United States have been reserved for sons of career military personnel — enlisted, warrant, and commissioned — of the Air Force, Army, Navy, Marine Corps and Coast Guard (active, retired, or deceased). The son of a Regular or Reserve member of the armed forces is eligible if:

(1) his parent is on active duty (other than for training) and has served continuously on active duty for at least eight years; *or*

(2) his parent was retired with pay or was granted retired or retainer pay (sons of Reservists retired while *not* on active duty status are ineligible); *or*

(3) his parent died after retiring with pay or after being granted retired or retainer pay (sons of deceased Reservists who were retired while *not* on active duty status are ineligible).

A person eligible under the Sons of Deceased or Disabled Veterans category may *not* be considered under the Presidential category.

In order for an adopted son to qualify as a Presidential candidate, he must have been legally adopted before his fifteenth birthday or proceedings must have been started before that time. Proof of adoption should be submitted with the application.

To request a nomination in this category, the individual (not his parent) must submit his application to the Associate Director of Admissions between 1 May and 31 January. He should not write directly to the President of the United States. Refer to the Presidential application format.

2. *Sons of Deceased or Disabled Veterans and Sons of Military or Civilian Personnel in a Missing Status*

The son of a deceased or disabled member of the armed forces is eligible if:

(1) his parent was killed in action or died of wounds or injuries received or diseases contracted in active service, or died from preexisting injury or diseases aggravated by active service; *or*

(2) his parent has a service-connected disability rated at not less than 100 percent resulting from wounds or injuries received or diseases contracted in active service, or resulting from preexisting injury or disease aggravated by active service.

The son of a parent who is in "Missing Status" is eligible if:

(1) his parent is a member of the armed services or a civilian employee in active government service who is officially carried or determined to be absent in a status of missing; missing in action;

interred in a foreign country; captured, beleaguered, or besieged by a hostile force; or detained in a foreign country against his will.

To request a nomination in this category, an individual must submit his application to the Associate Director of Admissions between 1 May and 31 January. Refer to formats of application in the appendix.

3. *Regular Components and Reserve Components*

Vacancies are available for enlisted members of the Regular Air Force. A candidate must be an active member of the Regular component when appointed to the Academy. Vacancies are allotted for enlisted members of the Air Force Reserve and the Air National Guard.

AFR 53-10, "Appointment to the United States Air Force Academy" gives complete directions for applying in the Regular and Reserve categories. A prospective candidate must apply through his unit commander, who will process his application and forward it to the Associate Director of Admissions for a determination of eligibility. The application form (AF Form 1786) should be obtained through normal publications supply channels at the military organization where the individual is assigned. Applications for both Regular and Reserve components must be submitted not later than 31 January for the class entering the following July.

4. *Honor Military and Naval Schools*

Vacancies are authorized for honor graduates of honor military and naval schools. The Departments of Air Force, Army and Navy determine annually which schools will be designated as honor schools. Each school may nominate three candidates from its honor graduates or prospective honor graduates to compete for the cadet vacancies. Each nomination must contain a certification by the head of the institution that the candidate was an honor graduate or is a prospective honor graduate during a year that the institution was designated an honor school. Application forms are provided by the Academy. Nominations must be submitted to the Associate Director of Admissions by 31 January.

5. *Air Force Reserve Officer Training Corps*

Three students from each college or university AFROTC unit may be nominated to compete for the authorized vacancies. A student should apply to the Professor of Aerospace Studies who must certify that he meets the basic eligibility requirements. The Professor of Aerospace Studies will recommend to the president of the institution the best qualified applicants. The president will submit the nominations on a form provided by the Academy indicating his concurrence and the satisfactory academic standing of the nominees. The form must be sent to the Associate Director of Admissions by 31 January.

6. *Air Force Junior Reserve Officer Training Corps*

Three students from each high school may be nominated to compete for the authorized vacancies. A student should apply to the Aerospace Education Instructor who must certify that he meets the basic eligibility requirements and by the end of the school year will have successfully completed the prescribed AFJROTC program and be awarded a certificate of completion and a high school diploma. The Aerospace Education Instructor will recommend to the principal of the high school the best qualified applicants. The principal will submit the nominations on a form provided by the Academy indicating his concurrence. The form must be sent to the Associate Director of Admissions by 31 January.

7. *American Samoa, Guam, and the Virgin Islands*

American Samoa, Guam and the Virgin Islands are authorized to have one cadet each enrolled at the Academy at one time. When a vacancy exists, the Governor of Samoa and the Delegates in Congress from Guam and the Virgin Islands may nominate ten candidates.

Names of all nominees must be submitted to the Associate Director of Admissions between 1 May and 31 January for the class entering the following July. The Congressional application format also will apply to these authorities.

Sons of Medal of Honor Recipients

The son of a Medal of Honor recipient who served in any branch of the armed services may apply for a nomination in this catgory. If an applicant meets the eligibility criteria and qualifies on the entrance examinations, he will be appointed to the Academy. Vacancies are not limited in this category. An applicant must write to the Associate Director of Admissions between 1 May and 31 January, using the sample letter in the appendix as a guide.

Qualified Alternate Candidates

The Air Force Academy Board may recommend qualified alternate candidates from all appointment categories in the number required to bring the Cadet Wing to its authorized strength. All qualified candidates will be considered on a competitive basis and no application by the individual is necessary.

Allied Students

The Air Force Academy may provide instruction to young men from allied countries as follows:

Republic of the Philippines

One student from the Philippines may be admitted to the Academy each year. The President of the Republic of the Philippines will be responsible for selecting nominees to be considered for this appointment.

American Republics

As many as 20 citizens from American Republics may be enrolled at the Academy at one time. Not more than three persons from any country in the American Republics may be enrolled at the same time.

To request a nomination, an applicant should write to an appropriate officer of his government, not to the Academy or other United States government offices. The letter should contain information about his background and should be submitted at least a year prior to admission in July.

Nominations should be received by 31 December for the class entering the following July, but they should be submitted as early as possible.

Requirements for admission are essentially the same for allied students as for United States cadets. The College Board Admissions Testing Program or the American College Testing Program tests and the qualifying medical examination are required for allied students. A nominee who does not speak English as his primary language must take the English Comprehension Level Test.

Students selected for the Academy must be able to read, write and speak English proficiently. English language instruction will be provided for them during basic cadet training and the fourth class year. Semester schedules and curricular requirements may be adjusted by the office of the Dean of Faculty to allow for specific language and cultural differences.

Allied students receive the same pay and allowances as United States cadets. However, the allowance for initial travel to the Academy is not limited to mileage for travel within the United States.

If an allied student should be judged unable to profit by the academic courses, become deficient in conduct or aptitude for commissioned service, or commit an offense for which a United States cadet would be dismissed, the Department of the Air Force will be requested to effect his withdrawal from the Academy.

Each student who meets the established academic requirements for allied students will be awarded a Bachelor of Science degree. If a student does not meet the degree requirements, he will be awarded a Certificate of Completion. Allied students are not commissioned in the United States Air Force.

REQUIRED EXAMINATIONS

Medical Examination

You must take a thorough medical examination which measures physical and mental

fitness for the strenous cadet program. The examination also measures the medical qualifications for Air Force flying training. Approximately 70 percent of the candidates admitted must possess the medical qualifications for pilot training; approximately 10 percent will be chosen to meet navigator standards; and the remaining 20 percent must fulfill the non-flying medical qualifications for an Air Force commission. Candidates admitted in the non-flying category must have outstanding academic or leadership aptitudes as reflected in their records.

The primary medical qualifications for each of the three categories are listed in the catalog appendix. You should give particular attention to the visual standards when reviewing these qualifications. Since a majority of the selected candidates must be pilot qualified, with 20/20 uncorrected vision, candidates who meet those visual standards will have a greater chance for admission.

Medical examinations for all service academies are scheduled by the Department of Defense (DOD) Medical Examination Review Board. A medical examination will be authorized only if an individual receives an official nomination or if an evaluation of his Precandidate Questionnaire indicates potential qualification for admission. Examining facilities will not conduct an examination unless the applicant is scheduled by this board.

You will be notified by letter as to the date, time and place of your examination. If possible you will be scheduled at a government medical facility near your home. You should make every effort to meet the scheduled date. If unable to be present on that date, you must notify the Medical Examination Review Board and the medical examining facility.

The report of your medical examination will be forwarded to the Medical Examination Review Board for evaluation and certification. You will be notified of your medical qualification status. If you have met all medical standards, you will be fully qualified. If you are found disqualified for a non-remedial condition, no further testing will be authorized. If you have a remedial disqualification, you will be advised of the corrective measures required before a reexamination is scheduled. The medical examination will be honored by all U.S. service academies and ROTC programs. Therefore, a candidate will be scheduled for only one examination if applying for more than one service institution.

Any questions concerning a candidate's medical qualification must be referred to the Director, DODMERB, Box 3000, US Academy, Colorado 80840. Phone number (303) 472-3560.

Physical Aptitude Examination

You must take a Physical Aptitude Examination (PAE) consisting of four exercises designed to measure coordination, strength, endurance, speed and agility. You will be scheduled to take the PAE at an examining center as close as possible to your home. A list of test items is included in the appendix. Failure to attain a satisfactory score is disqualifying for admission. Therefore, you should be in good physical condition before taking the test.

The same Physical Aptitude Examination will be honored by both the Air Force Academy and the Military Academy. A candidate applying for both service academies will need to take the PAE only once. If the exam is administered by the Military Academy, it is the candidate's responsibility to have the results forwarded to the Admissions Office, USAF Academy CO 80840.

Scholastic Tests

All candidates for admission to the Air Force Academy must take either the College Board Admissions Testing Program (ATP) or the American College Testing Program (ACT). If you choose the College Board ATP, you will be required to take the Scholastic Aptitude Test (SAT) consisting of a verbal section and a mathematics section. You are encouraged, but not required, to take the College Board Achievement Tests. If you choose the American College Testing Program, you must take

the entire ACT battery consisting of four tests: English, mathematics, social sciences and natural sciences.

The tests are offered on several dates during the fall and winter months. You may take the tests any time they are offered but not later than February of the year of admission to the Academy. It is advisable to register for the tests even if you have not yet received an Academy nomination. This will eliminate the risk of being unable to register if you should receive a nomination after the closing date for test registration. It is also desirable to take the tests prior to the February date so you can retake them in an effort to improve on your original scores.

It will be your responsibility to register for the tests several weeks in advance each time you wish to take them. Most high school counselors will have the scheduled testing dates and instruction booklets published by the College Board Admission Testing Program and the American College Testing Program. The booklets will contain descriptive information on the tests and registration instructions. Mail your test registration and test fee to the appropriate testing program office. You will be scheduled to take the tests at the exam center you have chosen if the quotas have not been filled. Otherwise, you will be scheduled at another center as close as possible to your home. When you register for the tests, you must request that your scores be sent to the Air Force Academy.

If your guidance counselor does not have complete information on the ATP or ACT tests, you may write directly to the respective offices as follows:

Write to the College Entrance Examination Board office, either at Box 592, Princeton, N.J. 08540, or Box 1025, Berkeley, CA 94701. (Candidates who live in Montana, Wyoming, Colorado, Arkansas, Texas and states west should write to the California office; others should write to the New Jersey office.)

Write to the Registration Department, American College Testing Program, Box 414, Iowa City, Iowa 52240.

In order to compare your test scores with the averages of previous Academy candidates, the following information is provided:

	Range	*Mean*
	ATP	
Verbal Aptitude	450-800	560
Math Aptitude	500-800	650
	ACT	
English	19-36	23
Social Sciences	21-36	27
Mathematics	23-36	30
Natural Sciences	22-36	30

You may benefit by taking one or both of these testing programs in your high school junior year. Then if you become an Academy candidate you may improve on previous scores by retaking the tests in your senior year.

EVALUATION AND SELECTION OF CANDIDATES

Selection panels, comprised of senior officers assigned to the Academy, evaluate candidate qualifications. Their evaluations are derived from entrance examination scores, ratings on prior academic and leadership performance, and certain recommendations.

The selection panels recommend qualified candidates to fill the available cadet vacancies in each nominating category. The recommendations are presented for approval to the Academy Board, composed of the Superintendent and his key staff officers. The appointment recommendations are subject to final approval of the Secretary of the Air Force.

Candidates who hold principal nominations, as well as certain highly qualified alternate candidates, may be notified of their appointments as soon as they meet all entrance requirements. Early notifications will begin in December. All other candidates will be notified late in April or early in May. Since a few selected candidates may decline their appointment offers, it is possible that some qualified candidates may not be notified of appointments until shortly before the new class enters.

REQUIREMENTS OF CADET APPOINTEES

Documentary Requirements

Social Security Number

If you do not have a social security number, you should apply for one prior to admission. The application form may be obtained from the local Post Office or the Social Security Administration Office. Ask for Treasury Department Form SS-5.

Transcripts and Activities Record

You will be required to submit your entire scholastic record in secondary school and in college if you have attended. Included in this record is your current rank in class. You will be required to submit an activities record outlining your high school extracurricular performance or other activities which indicate leadership potential. All of these documents are used to evaluate your aptitude and capability for success as an Academy cadet.

Birth Certificate or Proof of Citizenship

You must submit a certificate of birth, or proof of citizenship if you were foreign born or naturalized. U.S. citizenship is required unless applying as an allied student. A candidate who is an adopted son claiming eligibility in a nominating category through his adoptive parent must submit a copy of the court order of adoption.

Admission Deposit

Each appointee will be requested to deposit $300 before being admitted to the Academy. This deposit is necessary to help defray the initial costs of uniforms, supplies and other personal expenses that will be incurred immediately upon admission. Deposits should be in the form of a draft or money order made payable to the United States Treasury. The deposit will be collected during initial processing. In cases of extreme hardship this deposit may be reduced. Requests for waiver should contain full justification. An appointee who is unable to make a full deposit will receive reduced money allowances until his account reaches the level as prescribed for his class.

The $300 entrance deposit is supplemented by authorization of the Secretary of the Air Force to advance a maximum of $600.00 to each cadet upon admission to the Academy. This advance becomes an extension of credit when the cadet's cumulative earnings are exceeded by his cumulative indebtedness and will be extended only for the purchase of initial clothing and equipment. The advance must be repaid during the time a cadet is in training. The repayment is accomplished by recouping from the cadet the portion of his monthly pay not required for books, clothing, income tax, social security and other required items of expense. Recoupment continues until the advance is repaid.

Cadets who are involuntarily separated from the Academy prior to repayment of the advance will have all excess pay and allowances applied against the indebtedness. If the indebtedness is not satisfied by such application of funds, the cadets are permitted to turn in enough clothing and equipment of a distinctive military nature to liquidate the remaining balance. Cadets who are voluntarily separated for their own convenience are required to pay in full the amount of such indebtedness.

Travel Expenses

Except for an appointee who is provided government transportation under Joint Travel Regulations, each appointee is normally allowed eight cents per mile for travel expenses to the Academy from his home in the United States or Point of Entry into the U.S. Travel outside the continental limits of the United States is normally reimbursed at the rate of eight cents per mile for land travel and actual cost of travel by commercial ship or air, provided government transportation is not available. Travel allowances will be credited to the cadet's personal checking account. If an appointee refuses to take the Oath of Allegiance as a cadet upon arrival at the Academy, or if

an appointee is found to be disqualified from accepting the Oath of Allegiance because of some fault on his part, he will not be entitled to any travel allowances.

SERVICE OBLIGATIONS

The service obligations apply to all cadets except allied students from foreign nations.

Oath of Allegiance — When you begin processing into the Academy, you will be asked to take the following Oath of Allegiance:

> "I, _____ (*name*), having been appointed an Air Force cadet in the United States Air Force, do solemnly swear (or affirm) that I will support and defend the Constitution of the United States against all enemies, foreign and domestic; that I will bear true faith and allegiance to the same; that I take this obligation freely, without any mental reservation or purpose of evasion; and that I will well and faithfully discharge the duties of the office on which I am about to enter. So Help Me God."

Service Agreement: After you have taken the oath, you will be required to sign an agreement, with the consent of your parents or guardian if a minor, that you will fulfill the following service obligations:

Complete the course of instruction at the Academy (unless you are disenrolled by competent authority).

Accept an appointment and serve as a commissioned officer in the Regular Air Force for at least five years after graduation.

If authorized to resign from the Regular component before the sixth anniversary of your graduation, serve as an officer in the Reserve component until the sixth anniversary.

Service Understanding: You will be required to sign a Statement of Understanding which involves the following conditions set forth in Title 10 of the U.S. Code:

A cadet who enters the Academy from the Regular or Reserve component of any service, if discharged from the Academy prior to graduation, will normally revert to his former rank and branch of service for the completion of any prior service obligations. However, he may be transferred to a Reserve component in an enlisted grade and ordered to active duty.

A cadet who enters the Academy from civilian life will assume a six-year legal obligation to serve in the Air Force, either active or reserve. If discharged from the Academy prior to graduation (either through action taken by the Academy or upon approval of a cadet's request to resign) he may be transferred to the Air Force Reserve and ordered to active duty as an airman for not more than four years.

Discharge Policy: The policy requiring discharged cadets to serve in the Reserve may vary, depending on manpower needs of the Department of Defense. The current Air Force policy is as follows:

> *Fourth and Third Class Cadets* who are separated by the Academy or whose resignations are accepted will ordinarily be completely relieved from all military duty, active or reserve.
>
> *Second and First Class Cadets* who are separated or whose resignations are accepted will retain an active duty commitment (except for those separated for physical disability, unfitness, or unsuitability for further service). First and second classmen will normally be transferred to the Air Force Reserve and ordered to active duty in an enlisted airman status. A second classman may be ordered to active duty for not more than two years, effective with the beginning of the second class fall semester. A first classman may be ordered to active duty for not more than three years. When separation occurs as a result of deficiencies which are not considered willful, the active duty provision may be waived.

Resignation Policy: A cadet who submits a request to resign will be required to state a specific reason for his action. Appropriate procedures will be established for a determination of each case by the Academy Board, composed of the Superintendent and designated senior officers of the Academy.

PREPARATION GUIDANCE

HIGH SCHOOL PROGRAM

It is important to start preparing for the Academy well in advance of admission. Academic, leadership and physical preparation may even begin on the junior high school level. In senior high, you should definitely follow the program of preparation outlined in this chapter.

You should learn how to study effectively and budget your time to an advantage, for this is expected of every cadet at the Academy. To be successful, a cadet must give maximum effort to the curriculum of academic studies, military instruction and physical education.

High school counselors and Air Force Academy Liaison Officers may provide helpful assistance to students who are preparing and applying for the Academy. One of the most important things for you to know is *when* to apply. If you want to enter immediately after graduation from high school, as most cadets do, you must apply well in advance. It is advisable to apply for a Congressional nomination during the spring of your junior year. Members of Congress nominate their candidates from May through January for the cadet class entering the following July. Individuals who apply early usually stand a better chance of receiving a nomination.

Senators and Representatives are interested in nominating the student who has excelled academically in high school, who has demonstrated his leadership potential through school activities, who is physically fit, who is liked and respected by his associates, and who has a strong desire to pursue a military career.

If a student was not successful in obtaining an appointment to enter in July following his high school graduation, he may try for the Academy class entering the following year. The Academy encourages prospective candidates to attend a preparatory school or a civilian college or university during the intervening year.

Academic Preparation

An Academy candidate is required to take either the College Board Admissions Testing Program (ATP) or the American College Testing Program (ACT). These tests measure potential for success in the cadet academic program of the Academy. You are advised to take one or both of these testing programs in your high school junior year. If your scores are low in certain areas, you will have time to improve through further counseling and study. When you retake the tests as a candidate in your senior year, your scores may show considerable improvement. If your scores are high when you take the tests as a junior, you will not be required to retake the tests, although you may do so if you choose.

At the beginning of your junior year, you should obtain the ATP and/or ACT testing dates through your school counselor. It is your responsibility to register for the tests. The College Board conducts a Preliminary Scholastic Aptitude Test which provides excellent preparation and experience for the ATP tests. It is given in October each year.

To obtain the proper academic background for the ATP or ACT tests, you should definitely take the following subjects in high school and strive for above average grades in your class work:

English: Four years, including literature, composition, grammar, communication, and reading skills.

Mathematics: Four years, including algebra, geometry, trigonometry, and college preparatory mathematics.

Basic Sciences: Standard courses in physics and chemistry to include laboratory work. Additional courses in the sciences are desirable.

Social Sciences: A standard course in American History. Additional courses in history, economics, government, and geography are helpful.

A course in typing is recommended since cadets have many reports and themes to prepare. Typewriters are available to cadets.

Each cadet is required to take one foreign language, either German, Chinese, Japanese, Spanish, French or Russian. A high school background in one of these languages is helpful. The student who has an opportunity to take a language in high school should select one language and take as much instruction in it as possible. Two or three years of instruction are considered desirable. Either Russian or German is appropriate for cadets who may desire to major in the sciences.

The Academy does not require specific school courses or credits for admission. A candidate does not have to be a high school graduate to gain admittance. However, anyone who has not graduated from high school at the time of entering may lack the proper background to accomplish the program of education.

You should try to achieve the highest possible grades in your high school courses. A majority of the cadets have ranked in the top quarter of their graduating classes. Normally, a candidate has an adequate grade average if he ranks in the upper forty percent of his class. It may be necessary for a student who ranks below forty percent to obtain further preparation in college or preparatory school. The Academy does not recommend specific schools for preparation. Any accredited institution of higher education which offers a broad curriculum in the sciences, social sciences and humanities should provide adequate preparation for the Academy.

College credits may be transferred to the Academy if the courses correspond to those in the cadet curriculum and an acceptable grade level has been achieved. Cadets who have successfully completed college level high school courses, or those who have acquired extensive knowledge of a subject without taking a course, may take validation examinations after admission in an effort to obtain credit for comparable Academy prescribed courses. Placement/validation examinations are administered to each new cadet in the following subjects: English, history, geography, chemistry, mathematics, political science, and foreign language.

Cadets who have made high scores on College Board Advanced Placement tests may receive validation credit for comparable Academy courses. If you have taken advanced placement courses in high school you are advised to take the related advanced placement tests. These tests are administered in May of each year at College Board examining centers throughout the country. Registration in advance, including payment of fee, is necessary. Information on registration procedures, fees, testing dates, and examining centers is contained in the bulletin, *Advanced Placement Examinations,* available without charge. This bulletin may be obtained by writing to the College Board Advanced Placement Examinations at one of the following addresses: Box 592, Princeton, N.J. 08540, or Box 1025, Berkeley, Calif. 94701.

A cadet who demonstrates acceptable achievement in a subject through college transfer credit or validation examination will be allowed to complete the comparable Academy course at an accelerated rate or to omit the course and take an appropriate substitute. No matter how many courses a cadet may validate or transfer, he must enter as a fourth classman and spend four years at the Academy.

Students preparing for the Academy should plan to transfer credit or validate courses whenever possible. Cadets who have done so will be able to complete prescribed courses sooner, thus leaving more time in their schedule to gain depth in a subject area or prepare for post graduate study. Many Academy graduates will have opportunities for advanced study at civilian universities or Air Force technical schools.

Leadership Preparation

All phases of the Academy curriculum are devoted to preparing the cadet for leadership in the Air Force. Active participation in high school extracurricular activities provides valuable experience in preparing for positions of leadership responsibility. You should participate in extracurricular activities, both athletic and non-athletic. The following is considered to be evidence of leadership potential:

1. Class officers or student government officers.
2. Participation and achievement in athletics (football, baseball, basketball, track and other sports).
3. Meritorious awards in academic or leadership activities (Citizenship Award, Boys State Delegate, Boys Nation).
4. Participation and achievement in public speaking, debate, dramatics, publications or musical activities.
5. Participation and achievement in the Scouts, Civil Air Patrol, or Reserve Officer Training Corps.

Consideration is given to candidates who are prevented from extracurricular participation due to work requirements for family assistance.

Physical Preparation

Physical fitness is essential if a cadet is to succeed at the Academy. Many studies have shown that there is a definite correlation between physical fitness and the ability to succeed in the programs of education and training.

A Physical Aptitude Examination (PAE) is given to each candidate to measure his coordination, strength, endurance and agility. You should prepare for this examination by engaging regularly in vigorous physical activity such as running, exercises and sports, as well as practicing the specific skills of the PAE.

You should attempt to be in the best physical condition possible when you arrive for admission to the Academy. This will involve taking proper care of your health and building up your physical strength and endurance. Your first two months at the Academy will be devoted to a strenuous program of Basic Cadet Training. Physical exertion is required from morning until night as you go through the summer program. To be properly conditioned for the physical demands that will be placed upon you, it is strongly recommended that you prepare in advance through the following athletic activities:

1. Participate in vigorous competitive team sports such as baseball, basketball, football and track.
2. Participate in individual sports requiring sustained physical effort such as swimming,

tennis, handball, squash, boxing, judo or wrestling. It is important for you to learn how to swim before you enter the Academy. A distance of 500 feet in five minutes should be a minimum goal.

3. Perform strenuous conditioning exercises until many repetitions of each exercise can be accomplished without undue physical strain. Push-ups, pull-ups, sit-ups and other exercises which emphasize upper body strength and endurance are recommended.
4. Perform distance running regularly. Two-mile runs are recommended with alternate running and walking at first and gradually increasing the amount of running.

PREPARATORY SCHOLARSHIPS

Three non-profit agencies, the Falcon Foundation, the Gertrude Skelly Trust, and the General Henry H. Arnold Educational Fund, provide educational assistance programs to enable deserving young men to better qualify for admission to the Air Force Academy. These agencies have no official connection with the United States Air Force or the Air Force Academy. Neither do they have any connection with the Air Force Academy Foundation which raises funds to provide recreational and cultural facilities for the Academy.

The Falcon Foundation

The Falcon Foundation provides preparatory scholarships annually for highly motivated and qualified young men seeking admission to the Academy and a career in the Air Force. The scholarships are awarded through preparatory schools to students who need additional academic preparation.

The Foundation makes annual cash grants for these scholarships to specific preparatory schools in various parts of the nation. Application for scholarships and information concerning the schools should be made directly to the Falcon Foundation, Post Office Box 611, Dallas, Texas 75221. Completed applications must be received by the Falcon Foundation by 1 May each year.

The Gertrude Skelly Trust

The late Gertrude Skelly of Tulsa, Oklahoma, wife of William G. Skelly, founder of the Skelly Oil Company, established this trust fund. Scholarships from the fund will be awarded only to sons, adopted sons or step-sons of active, retired, or deceased career members of the armed forces of the United States. A young man should not apply unless his father was or is a career member of the armed forces. Complete information on applications may be obtained by writing to The Gertrude Skelly Trust Fund, Post Office Box 1349, Tulsa, Oklahoma 74101.

The General Henry H. Arnold Educational Fund

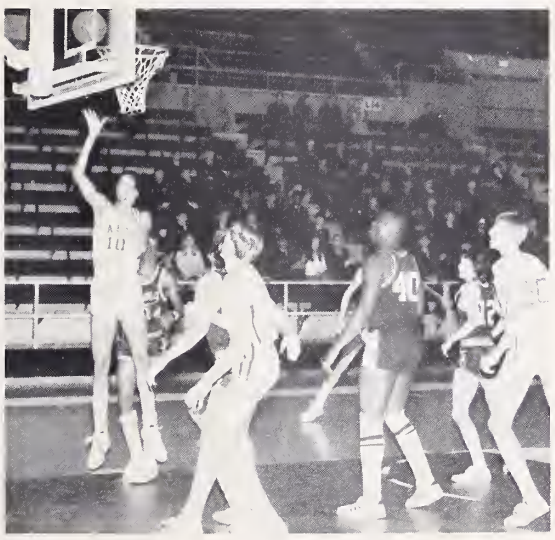
Sponsored by the Air Force Aid Society, this fund provides educational assistance to sons of Air Force personnel. Assistance is limited to college and preparatory schools beyond the high school level. The applicant may make his own choice of an accredited school. An application blank may be requested from: Director, Air Force Aid Soeiety, National Headquarters, Washington, D.C. 20333. An application blank is not available at Aid Society sections on Air Force installations. The completed application, including qualifications and need for financial assistance, must be returned to the Air Force Aid Society not later than 31 January preceding the fall of the year the applicant plans to enter college or preparatory school.

THE ACADEMY PREPARATORY SCHOOL

An Air Force Academy Preparatory School is available to members of Regular and Reserve components of the Air Force and to other eligible military nominees. Its purpose is to provide intensive instruction in English and mathematics to assist students in preparing for the Academy entrance examinations. It also prepares students for the academic, military and physical training programs of the Academy. The regular Preparatory School program starts in late July and continues through early May.

Details of application and eligibility are outlined in a joint service regulation entitled "Air Force Academy Preparatory School." (Specific regulation numbers are AFR 53-14, BUPERS INST. 1530.491, and MCO 1530.5C.) All applications must reach the Associate Director of Admissions at the Academy prior to 31 May.

Academy appointments are available each year for airmen on active duty in the Air Force Regular component and for airmen serving in the Air Force Reserve and the Air National Guard. Enlisted members of the Regular and Reserve components may apply for both a nomination to the Academy and an appointment to the Preparatory School by following AFR 53-14. Complete the required AF Form 1786 and submit it to your unit commander. He will forward the form along with his statement of recommendation to the Academy.



Members of the Army, Navy and Marine Corps are not eligible to apply for an Academy nomination under the Air Force Regular and Reserve categories. Members of these services must apply for a nomination from a Member of Congress or other authorized nominating source. Once a nomination has been obtained, an enlisted man will be eligible to apply for the Academy Preparatory School.

Academy candidates who were not offered appointments, but whose records indicate that they may improve their chances by additional academic preparation, will be given the opportunity to compete for assignments to the Academy Preparatory School. Normally, only candidates medically qualified for flying training are admitted. Candidates who have attended college or another preparatory school are not eligible. Candidates eligible to be considered will be notified in late April or early May. If a candidate is selected to attend the school, he must be willing to join the Reserve for a six year commitment.

Selection of students for the Preparatory School is made by the Air Force Academy. Selection is based on your high school academic record, your extracurricular activities, and the results of mental and medical examinations. *Selection for the Preparatory School, or completion of the course, in no way guarantees you an appointment to the Academy.* The Preparatory School student must follow the same procedure for obtaining a nomination and competing for an appointment as any other member of the Regular or Reserve components.

Active duty airmen who are eliminated from the school or fail to obtain Academy appointments will be reported for reassignment within the Air Force. Reservists who have been called to active duty will be released from duty but will be required to fulfill the remainder of their six year Reserve obligation.

QUESTIONS AND ANSWERS

Air Force Academy admissions procedures are not complicated, but an applicant must follow the requirements specifically as outlined in the Admissions and Preparation chapters of this catalog. To provide assistance to the applicant in understanding the most important facts, the questions that previous applicants have most frequently asked are given below with appropriate answers.

Q. Who can become a cadet?

A. Admission is open to young men of good moral character without regard to race, creed or national origin. Candidates must be citizens of the United States (unless applying as an allied student from the American Republics or the Philippines). A candidate must be unmarried and must be at least 17 years of age and not past his 22nd birthday on 1 July of the year of admission.

Q. How do I apply to become a cadet?

A. You must apply in one or more of the nominating categories authorized by law before you can be considered. 85% of the authorized nominations are allotted to Members of Congress.

Q. I don't know my Congressman or Senators. How can I get a nomination?

A. It is not necessary to know them personally. Apply to your Congressional Representative and to both of your Senators by mail, following the application format in this catalog. Each Member of Congress is authorized to have five of his appointees attending the Academy at any one time. Each Congressman is permitted to nominate up to ten candidates for each vacancy he has. Nominations are made primarily on the basis of merit as evidenced by candidate school records and tests. If you receive a nomination, but are not selected to fill the Congressman's vacancy you will still have a chance to become a cadet if you meet the qualifications. Each year several hundred of the best qualified alternate Congressional nominees are appointed to bring the entering class up to authorized strength.

Q. When should I apply for a Congressional nomination?

A. The best time to apply is during the spring of your junior year in high school. Some Congressmen have application deadlines as early as a year before the entrance date of the new class in July. Congressmen are asked to submit all nominations to the

Academy no later than January 31st of the year the class enters.

Q. I am in college now. Is it too late to enter the Academy?

A. Not as long as you would not be past your 22nd birthday on 1 July of the year of admission. But you must remain at the Academy for four years even though you have had previous college credit.

Q. My father was in the armed forces. Will this help me to get a nomination?

A. Sons of career members of the regular and reserve forces who are on active duty or who are retired may apply under the Presidential category. They may also apply for a Congressional nomination.

Q. If I received a nomination but failed to receive an appointment, am I eligible to apply for the Academy again?

A. Yes, but you must obtain a new nomination to become a candidate again.

Q. Can I apply for the Air Force Academy Preparatory School if I don't receive an appointment to the Academy?

A. An Academy candidate who fails to receive an appointment will automatically be evaluated for possible admission to the Prep School. If he meets the criteria he will be invited to apply for admission when he receives his candidate status notice in May. If selected for the Prep School he must be willing to enlist in the Air Force Reserve for six years.

Q. Do the admissions tests count a great deal in selection of candidates for Academy appointments?

A. Each candidate is required to take either the College Board Admissions Testing Program or the American College Testing Program. The results of these tests do weigh heavily in the Academy's overall evaluation of a candidate. Because the scores are important, it is advisable to take one of these testing programs in your junior year in high school. This will indicate your scholastic qualifications and enable you to prepare additionally if your scores are not high enough. After you become a candidate, you can retake the tests in your senior year.

Q. How do I go about taking these tests?

A. See your guidance counselor to obtain registration instructions. It is your responsibility to register for the tests and to have your scores forwarded to the Air Force Academy.

Q. Should I have my test results sent to my Congressman and Senators?

A. Some Members of Congress will consider, as part of their evaluation of applicants, the results of these examinations. You may desire to write directly to them to find out what their policies and requirements are, or you may receive these instructions from them after applying.

Q. I have nominations to both West Point and the Air Force Academy. Is it necessary that I take two medical examinations?

A. No, a Service Academy Medical Examination is acceptable for all service academies.

Q. What part of the medical examination gives the most difficulty to candidates?

A. The eye examination. 70% of the candidates admitted to the Air Force Academy must be flying qualified by having 20/20 vision uncorrected by glasses. Approximately 10% are navigator qualified, requiring 20/70 or better vision corrected to 20/20 by glasses. Candidates who are not pilot or navigator qualified will be considered for admission if they have outstanding academic or leadership aptitudes. To be considered, the refractive error must not be excessive and vision must be correctable to 20/20 with glasses.

Q. If I qualify to be a pilot am I required to take pilot training?

A. It is not mandatory, but a majority of the pilot-qualified cadets are expected to enter pilot training following graduation

from the Academy. There are other career areas open to Academy graduates who do not qualify for flying.

Q. What is my military service obligation on graduation?

A. The total military service obligation of an Academy graduate is six years. Current directives require five of these to be on active duty as an officer in the Air Force following graduation.

Q. What if I cannot make the required grades at the Academy?

A. In that case you would be dismissed for deficiency. The Academy gives cadets opportunities to receive additional academic instruction in an effort to improve grades and avoid dismissal, if possible.

Q. How can I prepare for the Air Force Academy to improve my chances of receiving a nomination and an appointment.

A. You will be assured of the most adequate preparation if you start on the junior high level to acquire an adequate background in English and mathematics. Continue your preparation in senior high with intensive English and math courses and take additional courses to enhance your preparation such as: physics, biology, chemistry, foreign language, history, government, and geography. Completing other basic courses in the sciences, social sciences and humanities will be helpful.

Q. Do I have to be an "A" student to get into the Academy?

A. No. But you should strive to obtain the best possible grades and to rank in the upper 40% of your class scholastically.

Q. Will it help my chances if I participate in sports and other extracurricular activities?

A. Yes, definitely. A student should seek to develop the personal traits which will mark him as a leader in school and community activities. The Academy evaluates a candidate's leadership potential by his record of extracurricular activities, or in lieu of those activities, the jobs he has held are considered.

Q. What are the admissions opportunities at the Air Force Academy for members of minority groups?

A. Opportunities are excellent. Currently, the Air Force Academy is making an extensive effort to contact minority group members who otherwise might not apply for admission.

Q. Will I have difficulty qualifying academically if I am a member of a minority group?

A. Not if you have prepared yourself adequately in advance by following the Academy's advice in the Preparation chapter of the catalog. If you need special assistance or advice on preparation, write to the Minority Affairs Division of the Admissions Liaison Office, USAF Academy, Colorado 80840.

Q. What reasons are given most frequently by cadets who resign from the Academy within a year after they enter?

A. (1) They were not sufficiently motivated for the demands of military life.

(2) They came to the Academy primarily because their parents wanted them to attend a service academy, and not because they were personally motivated.

(3) They realized that the military and academic programs were demanding, but they failed to understand the extent of the duties and pressure involved. Some were expecting more of a relaxed, college-type AFROTC program than the discipline of a service academy.

Q. Will my parents need to send money to me while I am a cadet?

A. No, the pay and allowances are considered sufficient for your self-support, provided you are economical in personal expenditures. Tuition, room and board, medical and dental care are provided. In addition, cadets receive monthly pay, for uniforms, books, and personal needs. This money is carefully budgeted for the cadet.

APPENDIX

GUIDE TO CONTENTS

LIAISON OFFICER COORDINATORS

Liaison Officer Coordinators are Air Force Reserve Officers, not on active duty, who act as admissions counselors for the Air Force Academy. Anyone interested in receiving counseling assistance should write or call the nearest Liaison Officer Coordinator.

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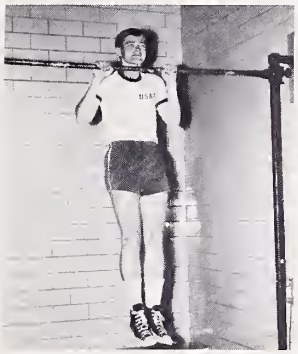
PHYSICAL APTITUDE EXAMINATION ITEMS

Candidates are advised to prepare for this exam by engaging in vigorous physical activities and by practicing on specific test items. The items included in this examination are listed below and the grade is based on total score.

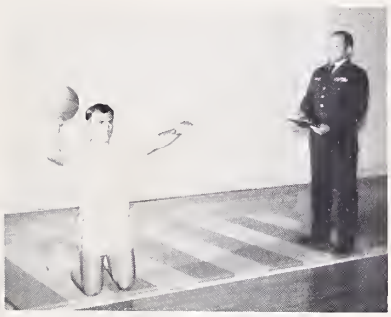


1. PULL-UPS

1. *Pull-ups* — From a momentary straight-arm hang position on a horizontal bar, palms away from face, elevate the body until the chin is above the bar. Return to the straight-arm hang position and repeat the movement as many times as possible.

2. *Standing Broad Jump* — From a standing position behind a take-off line, jump forward as far as possible. Swinging arms, bending knees, and raising heels off the floor is allowed but do not take a preliminary step or hop.

2. STANDING BROAD JUMP



3. BASKETBALL THROW

3. *Basketball Throw* — From a kneeling position on a mat, throw basketball overhead to attain as great a distance as possible. Three throws are allowed from behind throwing line.

4. 300 *Yard Shuttle Run* — Run six round trips between two turning lines, 25 yards apart, in the shortest time possible.

4. SHUTTLE RUN

PHYSICAL APTITUDE EXAMINATION SCORES

Total Candidate Population for Entrance July 1974

Event	*High-Scores*	*Mean Scores*	*Low Scores*
Pullups	20	8	3
Standing Broad Jump	9′6″	7′6″	5′3″
Basketball Throw	95′	65′	40′
300 Yard Shuttle	51 sec	60 sec	67 sec.

Above are the Air Force Academy Physical Aptitude Examination ranges of scores for the testing cycle ending in July 1974. The examination score is a total adjusted score for all four events. A high or low score on any one item does not insure success or failure on the overall examination, but low scores on all events would likely result in disqualification.

MEDICAL EXAMINATION REQUIREMENTS

An individual's medical qualification for appointment to the service academies is determined through one general standardized examination used by all academies. Examinations are conducted at designated examining centers located throughout the United States and at some overseas bases. To be considered as a final qualifying examination it must be taken on or after 1 June of the year preceding the year of admission. Therefore, individuals who are not selected for admission must reaccomplish portions of the medical examination should they become candidates in succeeding years.

The examining facility will not make a determination of the candidate's qualification for admission. Examination results will be forwarded for review by the Department of Defense Medical Examination Review Board (DODMERB). Its final determination regarding medical qualification will be furnished to the Academy, which will notify the candidate and his nominating authority.

In order to reach an appropriate decision the reviewing authority may ask the candidate to supply further reports of specialty consultation to clarify the significance of certain items of medical history or examination findings. Final qualification also may be withheld pending receipt by the Board of Certification that certain disqualifying remedial defects have been corrected. Such reports and certifications should be forwarded to the Board as soon as possible, and in no case later than 15 March.

Before taking the qualifying medical examination, an Academy applicant should review his past and present medical history with the assistance of his parents and family physician. The medical history must be compiled by the examining facility with particular care and full elaboration of details. Complete documentation of all illnesses, injuries and operations is absolutely necessary. The applicant may avoid delay in evaluation of his medical qualification by obtaining statements from the attending physician or from hospital records concerning any past or present medical care and presenting them to the examining facility when reporting for his examination.

Applicants are encouraged to undergo a thorough dental examination by their private dentist. All decay revealed visually or by x-ray should be filled at the applicant's expense before taking the qualifying medical examination. Final qualification will be delayed pending certification that such treatment has been completed.

Applicants who wear contact lenses must remove them a minimum of 21 days prior to the examination.

The following list of medical conditions is a guide for review by the applicant and his parents in recalling his full medical history. The list is not all inclusive, and it should not be taken as a guide to all conditions which may or may not be disqualifying to admission. Each case is evaluated individually within established standards.

Rheumatic fever
Swollen or painful joints
Bone, joint or other deformity
Painful or "trick" shoulder or elbow
Paralysis or lameness
Worn a brace or back support
"Trick" or locked knee
Arthritis or rheumatism
Frequent or severe headache
Dizziness or fainting spells
Ear, nose or throat trouble
Sinusitis, hay fever, or asthma
Frequent or painful urination
Kidney stone or blood in urine
Sugar or albumin in urine
Bed wetting
Shortness of breath
Pain or pressure in chest
Palpitation or pounding heart
High or low blood pressure
History of any surgical procedure
Frequent indigestion
Stomach, liver or intestinal trouble
Gall bladder trouble or gall stones
Stuttering or stammering
Frequent trouble sleeping
Sleepwalking
Frequent or terrifying nightmares
Depression or excessive worry
Nervous trouble
Head injuries with or without unconsciousness
Loss of memory or amnesia
Epilepsy or any type of seizures
Tuberculosis
Jaundice
Goiter, tumor, growth, cyst or cancer
Carious teeth, defective restorations, defective prosthesis, until corrected. Severe malocclusion or malrelation of the jaws. Orthodontic appliances in place for continued treatment. (Retainer appliances are permissible if all orthodontic treatment is completed.) Any dental defect that interferes with clear speech.

MEDICAL STANDARDS

Approximately 70 percent of the candidates admitted to the Air Force Academy must meet the established standards for pilot training. Also, it is planned that about 10 percent of the candidates will meet the standards for navigator training. The remainder are candidates who do not meet flying training standards but who are expected to meet the medical standards for commission in the United States Air Force at the time of graduation. Each applicant's report of medical examination is evaluated carefully on an individual basis, and no list of standards can cover all cases. However, those standards which are of interest to the greatest number of applicants are outlined below:

Pilot

Visual Acuity — Distant: Not less than 20/20, uncorrected, each eye. Near: Not less than 20/20, uncorrected, each eye.

Refractive Error — Not greater than −0.25 or +1.75 in any meridian nor an astigmatic correction greater than + or −0.75 in any one meridian (i.e., strength of lenses required to give the best possible corrected vision).

Weight — Must be proportionate to height and age. The general standards are as follows:

HEIGHT	WEIGHT	
	Minimum	*Maximum*
64	105	159
65	106	163
66	107	166
67	111	171
68	115	176
69	119	181
70	123	186
71	127	191
72	131	196
73	135	201
74	139	206
75	143	211
76	147	216
77	151	221
78	153	226
79	157	231
80	161	236

The weight standards noted above ordinarily will not be waived. However, exception to the standards may be granted if a generally large bone structure and large, well proportioned muscle masses without evidence of thick fat layers account for the excess weight. Gross obesity is disqualifying unless the excess weight is lost. Underweight will not be waived. Each case will be judged carefully and individually.

Height — Standing height: Not greater than 76 inches nor less than 64 inches.

Sitting Height — Not greater than 39 inches (measured while sitting erect — the distance from the top of the head to the chair seat).

Hearing — Maximum hearing loss cannot be greater than as follows: (ISO Standards (1964)

Each ear:

Frequency	500	1000	2000	3000	4000	6000
Loss	25	25	25	*	*	*

*No more than an average 45 decibel loss for both ears at each frequency.

Navigator

Visual Acuity — Distant: Not less than 20/70 uncorrected each eye — must be corrected 20/20. Near: Not less than 20/20 uncorrected each eye.

Refractive Error — Not greater than +3.00 or −1.50 diopters in any one meridian nor astigmatism greater than 2.00 diopters of cylinder (i.e., strength of lenses required to give the best possible corrected vision).

Height, Sitting Height, Weight, Hearing — Same as pilot standards.

Commission

Visual Acuity — Distant: Not less than 20/400 corrected to at least 20/20 in each eye. Near: Corrected vision of at least 20/20 in each eye.

Refractive Error — Not greater than +5.50 diopters or —4.00 diopters in any one meridian nor an astigmatic correction greater than +2.00 diopters in any one meridian (i.e., strength of lenses required to give the best possible corrected vision).

Eye Muscle Balance — No tropia.

Height — 64 inches minimum, 80 inches maximum.

Weight and Hearing — Same as pilot standards.

FORMAT

Request for Congressional Nomination

Nomination Deadline: 31 January 1976

Date .....

The Honorable .....
House of Representatives
Washington, D.C. 20515

OR

The Honorable .....
United States Senate
Washington, D.C. 20510

Dear Mr. .....:

Dear Senator .....:

It is my desire to attend the Air Force Academy and to serve in the United States Air Force. I respectfully request that I be considered as one of your nominees for the class that enters the Academy in July 1976 and submit the following data:

Name: *(print as recorded on birth certificate)* .....

Social Security number: .....

Permanent address: *(street, city, county, state, zip code)* .....

.....

Temporary address: .....

.....

Permanent phone number and area code: .....

Current phone number and area code: .....

Name of father: .....Name of mother: .....

Date and place of birth *(spell out month)*: .....

.....

Name and address of high school: .....

Date of graduation: .....Approximate grade average: .....

Furnish scores if you have taken tests:

PSAT		ATP		ACT	
VERBAL	MATH	VERBAL APT	MATH APT	ENGLISH	MATH

Extracurricular activities (Include athletic and non-athletic activities and work experience): .....

.....

State your reasons for wanting to enter the Air Force Academy: .....

.....

I (have) (have not) received a prospective candidate questionnaire from the Air Force Academy.

I will greatly appreciate your consideration of my request for a nomination to the Air Force Academy.

Sincerely,

Signature.....

FORMAT

Request for Vice Presidential Nomination

Application Deadline: 1 September 1975

Date.....

The Vice President
United States Senate
Washington, D.C. 20501

Dear Mr. Vice President:

It is my desire to attend the Air Force Academy and to serve in the United States Air Force. I respectfully request that I be considered as one of your nominees for the class that enters the Academy in July 1976 and submit the following data:

Name: *(print as recorded on birth certificate)* .....

Social Security number: .....

Permanent address: *(street, city, county, state, zip code)* .....

.....

Temporary address: .....

Permanent phone number and area code: .....

Current phone number and area code: .....

Name of father: .....Name of mother: .....

Date and place of birth *(spell out month):* .....

.....

Name and address of high school: .....

Date of graduation: .....Approximate grade average: .....

Extracurricular activities (Include athletic and non-athletic activities and work experience): .....

.....

State your reasons for wanting to enter the Air Force Academy: .....

.....

I (have) (have not) received a prospective candidate questionnaire from the Air Force Academy.

I will greatly appreciate your consideration of my request for a nomination to the Air Force Academy.

Sincerely,

Signature.....

FORMAT

Request for Presidential Nomination

Application Deadline: 31 January 1976

Associate Director of Admissions
USAF Academy, Colorado 80840

Date .....

Dear Sir:

It is my desire to attend the Air Force Academy and to serve in the United States Air Force. I request a nomination under the Presidential category for the class that enters the Air Force Academy in July 1976 and submit the following data:

Name: *(print as shown on birth certificate; if different from the name you use, attach a copy of court order, if applicable)* .....

Social Security number: .....

Permanent address: *(street, city, county, state, zip code)* .....

.....

Temporary address: .....

Permanent phone number and area code: .....

Current phone number and area code: .....

Date and place of birth: *(spell out month)* .....

.....

Date of high school graduation: .....

If member of military *(list your rank, social security number, regular or reserve component, branch of service, and organizational address including PSC and box no.)* .....

.....

If previous candidate: *(list year and candidate number)* .....

Information on Parent

Name, rank, social security number, component and branch of service: .....

.....

Organizational address: .....

Retired or deceased: *(give date and attach copy of retirement orders or casualty report)* .....

.....

Officer personnel: *(attach certified statement of service prepared by personnel officer specifying all periods of active duty)* .....

Enlisted personnel: *(attach statement prepared by personnel officer specifying all periods of active duty, listing date of enlistment and date of enlistment expiration)* .....

.....

Sincerely,

Signature .....

FORMAT

Request for Sons of Deceased or Disabled Veterans Nomination

Application Deadline: 31 January 1976

Date.....

Associate Director of Admissions
USAF Academy, Colorado 80840

Dear Sir:

It is my desire to attend the Air Force Academy and to serve in the United States Air Force. I request a nomination under the Sons of Deceased or Disabled Veterans category for the class that enters the Air Force Academy in July 1976 and submit the following data:

Name: *(print as shown on birth certificate; if different from the name you use, attach a copy of court order, if applicable)* .....

Social Security number: .....

Permanent address: *(street, city, county, state, zip code)* .....

.....

Temporary address: .....

Permanent phone number and area code: .....

Current phone number and area code: .....

Date and place of birth: *(spell out month)* .....

.....

Date of high school graduation: .....

If member of military *(list your rank, social security number, regular or reserve component, branch of service, and organizational address including PSC and box no.)* .....

.....

If previous candidate: *(list year and candidate number)* .....

Information on Parent

Name, rank, social security number, component and branch of service: .....

.....

Date and place of death or date and place disability occurred: .....

.....

Cause of death or disability: *(forwarding a copy of casualty report or copy of disability retirement order may expedite processing of your application)* .....

.....

Veterans Administration XC claim number: .....

Address of VA office where case is filed: .....

Sincerely,

Signature.....

FORMAT

Request for Sons of Persons in a Missing Status Nomination

Application Deadline: 31 January 1976

Date.....

Associate Director of Admissions
USAF Academy, Colorado 80840

Dear Sir:

It is my desire to attend the Air Force Academy and to serve in the United States Air Force. I request a nomination under the Sons of Persons in a Missing Status category for the class that enters the Air Force Academy in July 1976 and submit the following data:

Name: *(print as shown on birth certificate; if different from the name you use, attach a copy of court order, if applicable)* .....

Social Security number: .....

Permanent address: *(street, city, county, state, zip code)* .....

.....

Temporary address: .....

Permanent phone number and area code: .....

Current phone number and area code: .....

Date and place of birth: *(spell out month)* .....

.....

Date of high school graduation: .....

If member of military *(list your rank, social security number, regular or reserve component, branch of service, and organizational address including PSC and box no.)* .....

.....

If previous candidate: *(list year and candidate number)* .....

Information on Parent

Name, rank, social security number, component and branch of service: .....

.....

(Attach copy of DD Form 1300, Report of Casualty)

Sincerely,

Signature.....

FORMAT

Request for Sons of Medal of Honor Recipients Nomination

Application Deadline: 31 January 1976

Associate Director of Admissions
USAF Academy, Colorado 80840

Date.....

Dear Sir:

It is my desire to attend the Air Force Academy and to serve in the United States Air Force. I request a nomination under the Sons of Medal of Honor Recipients category for the class that enters the the Air Force Academy in July 1976 and submit the following data:

Name: *(print as shown on birth certificate; if different from the name you use, attach a copy of court order, if applicable)* .....

Social Security number: .....

Permanent address: *(street, city, county, state, zip code)* .....

.....

Temporary address: .....

Permanent phone number and area code: .....

Current phone number and area code: .....

Date and place of birth: *(spell out month)* .....

.....

Date of high school graduation: .....

If member of military *(list your rank, social security number, regular or reserve component, branch of service, and organizational address including PSC and box no.)* .....

.....

If previous candidate: *(list year and candidate number)* .....

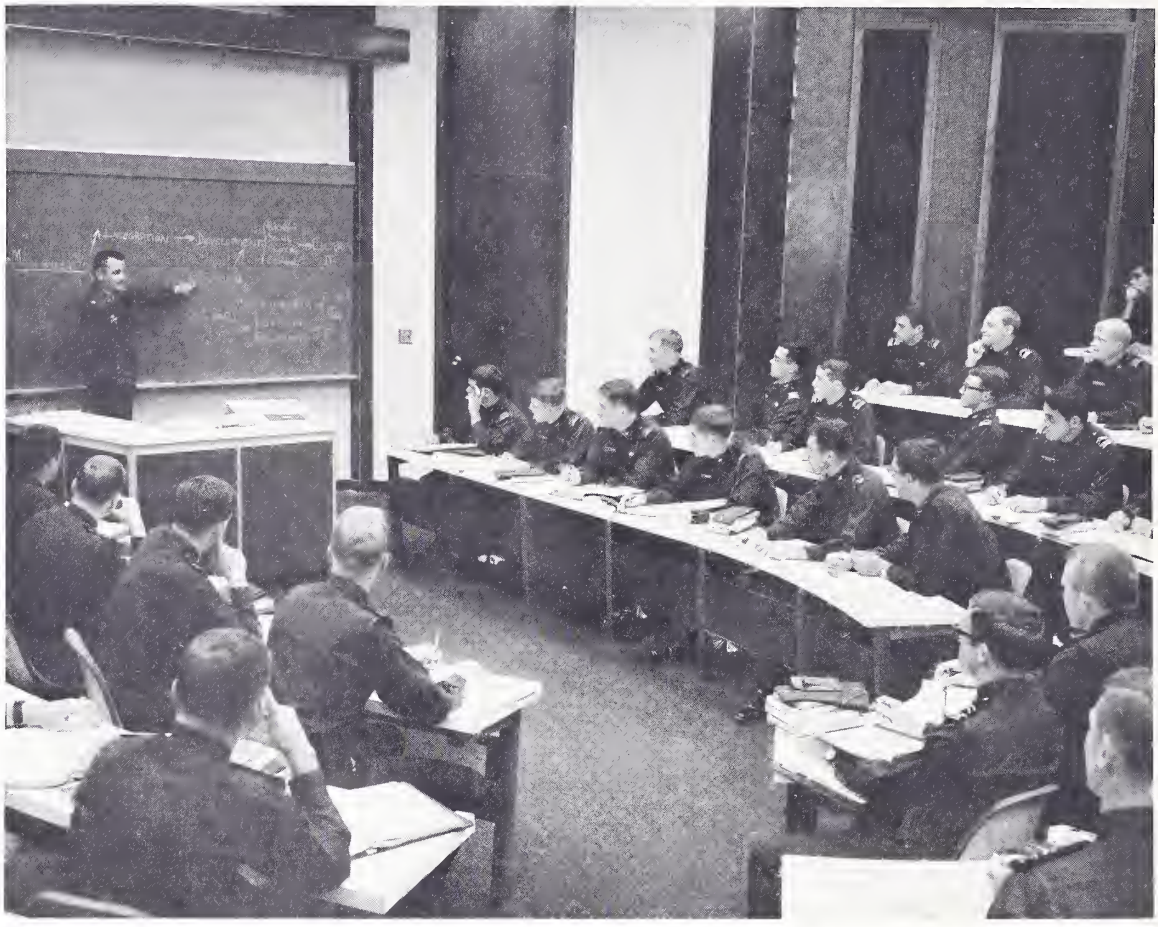
Information on Parent

Name, rank, social security number, component and branch of service of parent to whom the Medal of Honor was awarded: .....

.....

Sincerely,

Signature.....



SUMMARY OF COURSE OFFERINGS

Total number of courses offered in the curriculum including core and majors courses.

Courses	*Number*
Aeronautics	18
Airmanship	18
Area Studies	1
Astronautics	13
Atmospheric Science	6
Behavioral Sciences	17
Chemistry	23
Civil Engineering	17
Computer Science	10
Economics	17
Electrical Engineering	19
English	16
Fine Arts	6

Courses	*Number*
Foreign Languages:	
Chinese	4
French	12
German	10
Japanese	4
Russian	8
Spanish	10
Special Topics	1
Independent Study	1
Geography	16
History	21
Humanities	3
Instructional Technology	2

Courses	*Number*
Law	6
Life Sciences	21
Management	17
Mathematics	26
Mechanics	20
Military Studies	7
Military Training	28
Navigation	5
Philosophy	9
Physical Education	13
Physics	19
Political Science	21
Science	6

COURSE OFFERINGS

Descriptions of the courses to be offered during the academic year 1975-1976 are listed by subject in alphabetical order. Course numbers have a general meaning. The first digit of a course number indicates the class year for which the course is designed: 100 series for the Fourth Class year; 200 series the Third Class year; 300 series the Second Class year; and 400 series the First Class year.

Following the description of each course is a code such as 0, 1 or 2. This number is the course unit value which is used to determine a cadet's course load for a semester. After this number there may be an additional number in parentheses which is used for scheduling purposes and identifying the number of class hours the course meets per academic lesson.

Final examination or final report requirements, course prerequisites and semester hours are shown at the end of each course description. A designation of Pass/Fail at the end of a course description means that no letter grade is given and the student receives a Pass or Fail mark for the entire course. Courses without this designation are graded. A number of academic courses are offered in both the fall and spring semesters. In most courses, the credit awarded will be ½ semester hours greater for the longer spring semester than for the fall.

Aeronautics *(Aero)*

Offered by the Department of Aeronautics

Aero 331. *Introduction to Aeronautics and Thermodynamics I* 1 (2)

Introduction to the aeronautics disciplines of aerodynamics, thermodynamics, and flight mechanics. Lab. *Final exam. Prereq: Mech* 120. *Sem hrs:* 2½ *fall or* 3 *spring.*

Aero 332. *Introduction to Aeronautics and Thermodynamics II* 1 (2)

Continuation of Aero 331. Lab. *Final exam. Prereq: Aero* 331 *in the preceding semester. Sem hrs:* 2½ *fall or* 3 *spring.*

Aero 350. *Aeronautical Laboratory* 1 (2)

Selected experiments in the fields of aerodynamics, gas dynamics, propulsion, and flight dynamics. *Final report. Prereq: Aero* 361. *Sem hrs:* 2½ *fall or* 3 *spring.*

Aero 361. *Thermofluid Dynamics* 1 (2)

The second law of thermodynamics, power cycles, dimensional analysis, control volume analysis of fluid flow, one dimensional compressible flow, normal and oblique shocks, lift and drag calculations. Lab. *Final exam. Prereq: Aero* 331 *in preceding semester; Math* 124. *Sem hrs:* 2½ *fall or* 3 *spring.*

Aero 362. *Aerodynamics* 1 (2)

Determination of aerodynamic forces on thin wings and slender bodies in subsonic, supersonic and hypersonic flows and on blunt bodies in hypersonic flow. Newtonian flow, method of characteristics and similarity rules. Lab. *Final exam. Prereq: Aero* 361; *Math* 221. *Sem hrs:* 2½ *fall or* 3 *spring.*

Aero 363. *Heat Transfer* 1 (1)

Energy transport by conduction, convection, and radiation. General heat conduction differential equation and its application to simple conduction problems with and without heat generation, heat flow in fins, and unsteady heat flows. Treatment of fluid dynamics and thermal boundary layers as applied to flat plates in forced convection. Reynold's analogy. Black and gray body radiation, and radiation inside enclosures. Lab. *Final exam. Prereq: Aero* 331. *Sem hrs:* 2½ *fall or* 3 *spring.*

Aero 434. *Aircraft and Engine Performance Laboratory* 1 (2)

Selected experiments in the fields of flight mechanics and aerospace propulsion. A laboratory course designed for students not pursuing an aeronautical engineering major. *Final report. Prereq: Aero* 332 *or* 361. *Sem hrs:* 2 *fall or* 2½ *spring.*

Aero 456. *Flight Mechanics I* 1 (2)

Take-off and landing, level flight, steady climb and accelerated climb, maximum range and endurance. Longitudinal and lateral static stability and control, maneuvering flight, and dynamic stability. Lab. *Final exam. Prereq: Aero* 331; *Math* 221. *Sem hrs:* 2½ *fall or* 3 *spring.*

Aero 457. *Flight Mechanics II* 1 (1)

Continuation of Aero 456. General equations of aircraft motion. Topics in accelerated performance. Extension of aircraft stability, control and handling qualities analyses. Lab. *Final exam. Prereq: Aero* 456; *Math* 351. *Sem hrs:* 2½ *fall or* 3 *spring.*

Aero 461. *Propulsion I* 1 (2)

Aerothermochemistry, airbreathing jet propulsion engines, aircraft performance, chemical rocket propulsion, and space propulsion systems. Lab. *Final exam. Prereq: Aero* 361. *Sem hrs:* 2½ *fall or* 3 *spring.*

Aero 462. *Propulsion II* 1 (1)

Advanced studies of airbreathing and rocket propulsion systems and other energy conversion techniques. *Final exam. Prereq: Aero* 461. *Sem hrs:* 2½ *fall.*

Aero 463. *Advanced Topics in Aeronautics* 1 (1)

Topics of current interest in aerodynamics, propulsion, performance, stability and control. *Final exam. Prereq: Aero* 362 *or department permission. Sem hrs:* 3 *spring.*

Aero 464. *Aircraft Design* 2 (2)

Fundamentals of design presented by preliminary design of an advanced airlift vehicle. Determination of vehicle configuration to meet given specifications, weight estimation, selection of propulsive system, performance calculations, longitudinal and lateral static stability analysis. Field trip. Lab. *Final report. Prereq: Aero* 362; *completed or enrolled in Aero* 456. *Sem hrs:* 5 *spring.*

Aero 466. *Propulsion Design* 2 (2)

Individual problems in propulsion systems design. Field trip. Lab. *Final report. Prereq: Aero* 461. *Sem hrs:* 5 *spring.*

Aero 472. *Thermodynamics of Energy Conversion* 1 (1)

Study of the laws and concepts of thermodynamics with applications to power generation. Principles of energy release and conversion into useful work. Thermodynamic availability. Applications to vapor power cycles, internal combustion engines, and direct energy conversion. *Final exam. Prereq: Aero* 332 *or Aero* 361. *Sem hrs:* 2½ *fall or* 3 *spring.*

Aero 473. *Aerodynamics of Real Fluids* 1 (1)

Analysis of laminar and turbulent boundary layers. Solutions by analytical and numerical means. Introduction to kinetic theory of gases including flow with translational nonequilibrium. *Final exam. Prereq: Aero* 362. *Sem hrs:* 2½ *fall.*

Aero 495. *Special Topics* 1 (1-2)

Selected topics in aeronautics. *Final exam or final report. Prereq: Department permission. Sem hrs and offering time determined by department (not more than* 3 *sem hrs).*

Aero 499. *Independent Study* 0-2 (0)

Individual study and research supervised by a faculty member. Topic established with the department head. *Final report. Sem hrs:* 1 *to* 6 *fall or spring.*

Airmanship *(Armnshp)*

Offered by the Deputy Commandant for Military Instruction

Armnshp 101. *Sailplane Introduction* 0 (0)

Required course for the Fourth Class to provide an introduction to the basic principles of flying, motivation for further development of aviation skills, and an appreciation for related responsibilities. Consists of 1-3 sailplane sorties utilizing both winch and aerial tow launches. *Pass/Fail. Sem hrs:* 0 *fall and spring.*

Armnshp 370. *Flight Indoctrination* 0 (0)

Provides the cadet with an appreciation of aviation skills, aircrew responsibilities, and jet aircraft capabilities. Two local flights and one cross country (out and back) in a jet trainer. Includes aircraft familiarization, cross country, and instrument flight. *Pass/Fail. Sem hrs:* ½ *fall or spring.*

Armnshp 400. *T-41 Flying Training* 2 (3)

Required course for all First Classmen who volunteer to take Air Force pilot training following graduation. Includes dual flight instruction, ground school, and solo flight training. (Completion during summer offering fulfills requirement for Mil Tng 400.) *No final. Prereq: 1/C standing. Sem hrs:* 5 *summer, fall or spring.*

Armnshp 401. *Introductory Flying Training and Term Project* 2 (0)

Designed for cadets who drop Armnshp 400 during a semester subsequent to the time for enrollment in a substitute course. Includes ground school, dual flight instruction, and individual study and research under the direction of a faculty member. *Final report. Prereq: Prior enrollment in Armnshp* 400, *same semester. Sem hrs:* 5 *fall or spring.*

Armnshp 432. *Cadet Parasail Instructor Training* 0 (0)

Trains selected cadets as instructors for parasail operations during BCT and the academic year. Consists

primarily of instruction techniques, parasail procedures, equipment operation, and proficiency tows. *Pass/Fail. Prereq: Mil Tng* 452 *or Armnshp* 490. *Sem hrs:* 1 *fall or spring.*

Armnshp 433. *Cadet Parasail Instructor Duty* 0 (0)

Open to selected cadets who wish to serve as instructors in Armnshp 432 and BCT Parasail orientation. (Completion during summer offering fulfills requirement for Mil Tng 200 or ½ requirement for Mil Tng 300 or Mil Tng 400.) *Pass/Fail. Prereq: Armnshp* 432. *Sem hrs:* 1 *fall or spring,* 2½ *summer.*

Armnshp 450. *Airplane Rating, Private* 0 (0)

Dual instruction, ground school, and solo flight training to complete the requirements for an FAA pilot certificate. This training is conducted with the USAFA Aero Club through the Cadet Aviation Club (a cadet extracurricular activity) and is available to a limited number of cadet volunteers. Any cadet who possesses an FAA private pilot airplane rating may validate this course. *Pass/Fail. Sem hrs:* 2½ *summer, fall or spring.*

Armnshp 451. *Glider Rating, Private* 0 (0)

Dual instruction, ground school and solo flight training to complete the requirements for an FAA Pilot Certificate-Glider Rating, Private. (Completion during summer offering fulfills requirements for Mil Tng 200.) *Pass/Fail. Sem hrs:* 2½ *summer.*

Armnshp 460. *Airplane Rating, Commercial* 0 (0)

Dual instruction, ground school, and solo flight training to complete the requirements for an FAA Pilot Certificate-Airplane Rating, Commercial. *Pass/Fail. Prereq: Armnshp* 450 *or FAA Private Certificate. Cadet who possesses an FAA Commercial Pilot-Airplane Rating may validate this course. Sem hrs:* 1½ *summer, fall or spring.*

Armnshp 461. *Glider Rating, Commercial* 0 (0)

Dual instruction, ground school, and solo flight requirements for a Pilot Certificate-Glider Rating, Commercial. (Completion during summer offering fulfills requirement for Mil Tng 200 or ½ requirement for Mil Tng 300 or Mil Tng 400.) *Pass/Fail. Prereq: Armnshp* 451 *or FAA Pilot Certificate-Glider Rating, Private. Sem hrs:* 2½ *summer, fall or spring.*

Armnshp 470. *Airplane Rating, Instrument* 0 (0)

Dual instruction, ground school, and instrument trainer instruction to complete the requirements for an FAA Pilot Certificate, Instrument Rating. *Pass/Fail. Prereq: Armnshp* 450 *or FAA Private Pilot Certificate. Cadet who possesses an FAA Instrument-Airplane Rating may validate this course. Sem hrs:* 1½ *summer, fall or spring.*

Armnshp 471. *Glider Rating, Flight Instructor* 0 (0)

Dual instruction, ground school, and solo flight requirements for an FAA Flight Instructor Certificate-Glider Rating. (Completion during summer offering fulfills requirement for Mil Tng 200 or ½ requirement for Mil Tng 300 or Mil Tng 400.) *Pass/Fail. Prereq: Armnshp* 461 *or FAA Pilot Certificate-Glider Rating, Commercial. Sem hrs:* 2½ *summer, fall or spring.*

Armnshp 480. *Airplane Rating, Flight Instructor* 0 (0)

Meeting the requirements for an FAA Flight Instructor Certificate-Airplane Rating. *Pass/Fail. Prereq: Armnshp* 460. *Cadet who possesses an FAA Flight Instructor Certificate-Airplane Rating may validate this course. Sem hrs:* 1½ *summer, fall or spring.*

Armnshp 481. *Cadet Soaring Instructor Duty* 0 (0)

Open to selected cadets who wish to serve as flight and ground instructors in Armnshp 101, 451, 461, and 471. (Completion during summer offering fulfills requirement for Mil Tng 200 or ½ requirement for Mil Tng 300 or Mil Tng 400.) *Pass/Fail. Prereq: Armnshp* 471. *Sem hrs:* 2½ *summer, fall or spring.*

Armnshp 490. *Basic Free Fall Parachuting* 0 (0)

Instruction in emergency use of the parachute more advanced than taught in basic airborne training. Familiarizes cadet with emergency and free fall parachuting as it pertains to his future Air Force career. Completion of seven jumps required. (Completion during summer offering fulfills ½ requirement for Mil Tng 300 or Mil Tng 400.) *Pass/Fail. Sem hrs:* 2½ *summer, fall or spring.*

Armnshp 491. *Advanced Parachute Training* 0 (0)

Ground and aerial training which allows cadets to progress from basic free fall training through delayed free falls, controlled body maneuvers, precision landing and competitive parachuting. Requirements are fulfilled toward Class B, U. S. Parachute Association License. *Pass/Fail. Prereq: 3/C standing; Mil Tng* 452; *Armnshp* 490. *Sem hrs: 1½ fall or spring.*

Armnshp 492. *Cadet Parachute Instructor Training* 0 (0)

Trains selected cadets as instructors for Armnshp 490. Consists primarily of instruction techniques, jumpmaster procedures, and proficiency jumps. Requirements are fulfilled toward an FAA Senior Rigger Certificate and a Class C, U. S. Parachute Association License with jumpmaster rating. *Pass/Fail. Prereq: Armnshp* 491. *Sem hrs:* 2 *spring.*

Armnshp 493. *Cadet Parachute Instructor Duty* 0 (0)

Open to selected cadets who wish to serve as instructors in Armnshp 490. Cadets compete in collegiate meets. Requirements are fulfilled toward a Class D (Expert), U.S. Parachute Association License. (Completion during summer offering fulfills ½ requirement for Mil Tng 300 or Mil Tng 400.) *Pass/Fail. Prereq: Armnshp* 492. *Sem hrs: 2½ summer, fall or spring.*

See Mil Tng 100 for additional cadet flying administered by the Airmanship Division.

Area Studies *(Area Stu)*

Offered by Department of English and Fine Arts

Area Stu 351. *The American Identity* 1 (1)

Interdisciplinary course. Considers the origins, development, and nature of the American character. Readings, reports, and projects incorporate the views and methodology of Literature, Law, Philosophy, and the Social Sciences. *Final exam. Prereq: English* 112. *Sem hrs: 2½ fall.*

Astronautics *(Astro)*

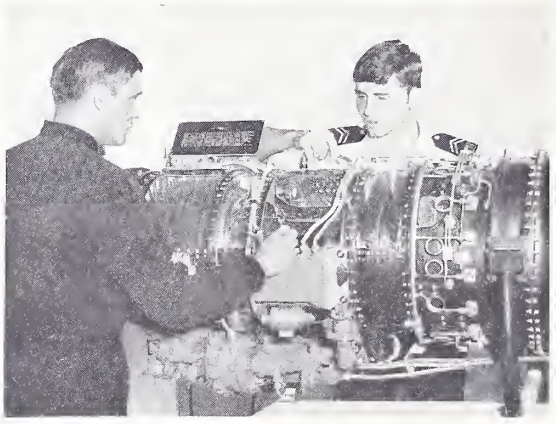
Offered by the Department of Astronautics and Computer Science

Astro 332. *Introduction to Astronautics* 1 (1)

Fundamental survey of the problems and principles of astronautics: Includes problem modeling, elementary error analysis, flat earth trajectories, ballistic missile trajectories, a survey of rocket propulsion, inertial navigation and guidance, physiological problems of space travel, reentry, the space environment and present Air Force space operations. The application of the restricted two-body model to satellites and interplanetary trajectories includes integrals of the equations of motion, methods of orbit description and determination, Hohmann and general transfer orbits, plane changes, satellite rendezvous, and ground traces. *Final exam. Prereq: Mech* 120, *Math* 124. *Sem hrs: 2½ fall or* 3 *spring.*

Astro 395. *Aerospace Flight Simulation* 1 (1)

An introductory and interdisciplinary course integrating pilot response to the dynamics of an aerospace flight simulator. Small teams analyze in depth one of the following areas: human response, pilot-vehicle interaction, vehicle and trajectory math models, vehicle control laws, or computer interface and software. Total system design is accomplished by management of group interaction. Flight tests are performed on the T-38 combat simulator and/or the movable space docking simulator. Lab. *Final project report. Prereq: Astro* 332, *1/C or 2/C standing and department permission. Sem hrs:* 3 *spring.*



Astro 450. *Principles of Airborne Fire Control* 1 (1)

Current Air Force fire control systems are analyzed to explain the engineering application of vector kinetics, kinematics, linearization theory, introduction to inertial sensors and rigid body motion. The AC-130 gunship, F-4, F-15, F-106 gun fire control systems are used to explain air-to-ground and air-to-air weapons delivery. Air-to-air missile guidance. Field trip to understand implementation of an operational system. *Final exam. Prereq: Mech* 361, *Math* 351, *El Engr* 332. *Sem hrs: 2½ fall.*

Astro 451. *Astrodynamics* 1 (1)

A basic course in astrodynamics based on two-body orbit mechanics. Topics include an introduction to orbit determination, time and position in the orbit, orbit maneuvers, rendezvous and docking and lunar trajectories. Emphasis is on problem solving with specific applications toward astrodynamics. *Final exam. Prereq: Completion of any core math sequence; Comp Sci* 200; *Astro* 332; *completed or enrolled in Mech* 361. *Sem hrs: 2½ fall or* 3 *spring.*

Astro 452. *Linear Control System Analysis* 1 (2)

Formulation and analysis of the linear control problem by both state variable and transform methods. Synthesis of linear control systems emphasizing the root locus method. Includes laboratory analysis and synthesis with real hardware and/or analog simulation. *Final report. Prereq: Math* 351; *Mech* 361; *Science* 350 *or El Engr* 345. *Sem hrs:* 2½ *fall or* 3 *spring.*

Astro 453. *Advanced Astrodynamics* 1 (1)

A continuation of Astro 451. Topics include orbit determination, data smoothing, differential correction, general and special perturbations and interplanetary trajectories. Course is directed toward the development of tools and skills necessary to solve realistic problems in astrodynamics. *Final exam. Prereq: Astro* 451. *Sem hrs:* 3 *spring.*

Astro 454. *Inertial Navigation and Automatic Guidance* 1 (1)

Inertial navigation including studies of the gyroscope, accelerometer, gyrostabilized platform, gyrocompass, system mechanization, navigation equation development and solution. Automatic guidance including methods of developing guidance equation for steering booster rockets to accomplish missions such as orbital injection, orbital intercept, ballistic bombing, and soft landing. *Final exam. Prereq: Astro* 451 *and* 452. *Sem hrs:* 3 *spring.*

Astro 465. *Modern Control Theory and Design* 1 (2)

Linear system analysis using state variable approach, phase plane analysis of linear and nonlinear systems, estimation of variables, optimization theory. Design of controls for typical Air Force systems such as attitude control, IR seeker missiles, ICBM gimballed thrusters. *Final project report. Prereq: Astro* 452 *or department permission. Sem hrs:* 3 *fall.*

Astro 466. *Digital Control Theory and Design* 1 (2)

Recent theory and developments in digital control systems related to Air Force systems. Sampled data systems, z-transform theory, digital estimation, optimal digital systems. Man-in-the-loop systems and system identification techniques. Design of typical digital control systems using minicomputers. *Final project report. Prereq: Astro* 465 *or department permission. Sem hrs:* 4 *spring.*

Astro 467. *Mission Analysis for Aerospace Vehicles* 1 (1)

Analysis of aerospace missions and interaction of mission objectives with vehicle design requirements and constraints. Includes systems analysis of propulsion, guidance, navigation, attitude control, thermal control, life support, power and communications requirements. Preliminary design of a launch vehicle or spacecraft to satisfy a specific mission. Digital computer used as a design tool. Field trip. *Final report. Prereq: Astro* 451. *Sem hrs:* 2½ *fall.*

Astro 468. *Aerospace Vehicle Systems Design* 1 (2)

Design of aerospace systems and subsystems. Description and applications of state-of-the-art subsystems and advanced designs. Application of tools and techniques from previous courses including digital and analog computers for analysis and synthesis. Completion or extension of design project begun in Astro 467. *Field trip and lab. Final project report. Prereq: Astro* 467 *in previous semester. Sem hrs:* 4 *spring.*

Astro 495. *Special Topics* 1 (1)

Selected topics in astronautics. *Final exam or final report. Prereq: Department permission. Sem hrs and offering time determined by department (not more than* 3 *sem hrs).*

Astro 499. *Independent Study* 1-2 (0)

Individual study and research supervised by a faculty member. Topic established with the department head. *Final report. Sem hrs:* 2 *to* 6 *fall or spring.*

Atmospheric Science *(Atm Sci)*

Offered by the Department of Physics

Atm Sci 250. *Introduction to Atmospheric Science* 1 (1)

Composition, structure, and behavior of the atmosphere. Emphasizes causes of observed phenomena in terms of fundamental physical concepts. Vertical structure, the nature of atmospheric variables and the interrelations of these variables, air masses and fronts, radiation processes, clouds and precipitation, horizontal motions, general circulation, vertical and horizontal analysis of a specific weather situation, discussions of current weather. Field trip. *Final exam. Prereq: Physics* 211. *Sem hrs:* 2½ *fall or* 3 *spring.*

Atm Sci 351. *Physical Processes in the Atmosphere* 1 (1)

Physical concepts of cloud and precipitation formation including weather modification; atmospheric optics and acoustics; introduction to air pollution meteorology, radar meteorology and aeronomy (the study of the upper atmosphere). *Final exam. Prereq: Completed or enrolled in Atm Sci* 250. *Sem hrs:* 2½ *fall.*

Atm Sci 380. *Weather Forecasting Techniques* 1 (1)

Evaluation and interpretation of centrally prepared weather charts to arrive at short range local forecasts. Includes local weather peculiarities; objective forecasting methods; role of convergence and divergence; temperature advection, thickness patterns, and vorticity; and weather of significance to aircraft operations. Discussion of current weather over continental U.S., local area forecasts and debriefs. *Term project. Prereq: Atm Sci* 250. *Sem hrs:* 2½ *fall or* 3 *spring.*

Atm Sci 444. *Dynamics of the Atmosphere* 1 (1)

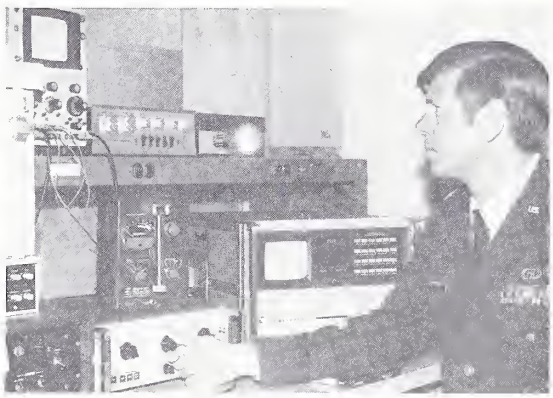
Fluid motion; equation of continuity; geostrophic, gradient, and cyclostrophic flow; pressure changes; fronts; circulation, vorticity and divergence theorems and their applications; role of large-scale vertical motions; introduction to numerical weather prediction. *Final exam. Prereq: Math* 222, *Atm Sci* 250 *or department permission. Sem hrs:* 2½ *fall.*

Atm Sci 450. *Atmospheric Thermodynamics, Statics and Radiation* 1 (1)

Variables of state, equation of state, thermodynamics of dry, moist and saturated air; changes of phase: thermodynamic diagrams; hydrostatic equilibrium and altimetry: atmospheric stability; laws of radiation; atmospheric energy balance; transport of atmospheric energy by the global wind systems. *Final exam. Prereq: Math* 222, *completed or enrolled in Atm Sci* 250. *Sem hrs:* 3 *spring.*

Atm Sci 495. *Special Topics* 1 (1)

Selected topics in atmospheric science. *Final exam or final report. Prereq: Department permission. Sem hrs:* 3 *spring.*



Behavioral Sciences *(Beh Sci)*

Offered by the Department of Life and Behavioral Sciences

Beh Sci 211. *General Psychology* 1 (1)

Presents those determinants of behavior which contribute to physical, psychological, and social maturity. Applies psychological principles from the areas of learning, perception, motivation, personality, mental health, and group processes to understanding human behavior, achieving personal adjustment and developing Air Force leadership. *Final exam. Sem hrs:* 2½ *fall or* 3 *spring.*

Beh Sci 302. *Applied Behavioral Science in the Military Environment* 1 (1)

An interdisciplinary study of behavioral science applications related to the leadership role and the military environment. Individual behavior, group processes, and the larger environment are studied as sources of influence on the leader and the led. Topical problems are considered in light of contemporary behavioral theory. *Final exam. Prereq: Beh Sci* 211/301; 3/*C or higher standing. Sem hrs:* 2½ *fall or* 3 *spring.*

Beh Sci 331. *Statistical Methods Applied to Behavioral Science* 1 (2)

Examines univariate and bivariate graphical and statistical methods for describing psychological data. Investigates parametric and nonparametric statistical techniques for experimental hypothesis testing and relates them to design of psychology experiments. Emphasis is placed on learning by doing through description and analysis of actual behavioral science data. Lab. *Final exam. Prereq: Completion of any core math sequence. Sem hrs:* 2½ *fall or* 3 *spring.*

Beh Sci 350. *Psychobiology* 1 (1)

Examines the neurophysiological bases of human and animal behavior. Emphasis is given to central nervous system mechanisms which mediate processes such as learning, intelligence, perception and emotional behavior. Correlates the experimental evidence of physiology and psychology in explaining behavior. *Final exam. Prereq: Life Sci* 210; *Beh Sci* 211/301. *Sem hrs:* 3 *spring.*

Beh Sci 351. *Cultural Anthropology* 1 (1)

The study of man as culture determines his behavior. Using theories of the nature of culture and cultural processes, contemporary cultures are analyzed focusing on problems inherent in their interrelations. *Final exam. Sem hrs:* 2½ *fall or* 3 *spring.*

Beh Sci 352. *Social Psychology* 1 (1)

Investigates interactional forces between groups and the individual in society. Examines effects of diverse social and psychological pressures such as public opinion and propaganda on the individual and groups. Emphasis is placed on attitude formation, selective perception, and attitude change. Field trips required. *Final exam. Prereq: Beh Sci* 211/301. *Sem hrs:* 2½ *fall.*

Beh Sci 360. *Sociology* 1 (1)

Scientific study of the influence of group life on human behavior. Major emphasis is on such contemporary social problems as race relations, drugs, the environment, and cultural change as well as military and civilian attitudes and values. *Final exam. Sem hrs:* 2½ *fall or* 3 *spring.*

Beh Sci 370. *Tests and Measurements* 1 (1)

Introduction to the general area of educational and psychological measurement. Theory, content, and uses of measuring devices in the determination and analysis of individual differences. Emphasis on performance, ability, and achievement tests and interpretation of test results. *Final exam. Prereq: Beh Sci* 211/301; *completed or enrolled in Beh Sci* 331. *Sem hrs:* 2½ *fall.*

Beh Sci 372. *Experimental Psychology* 1 (2)

Experimental design and psychological research methods with special application to Air Force problems of human behavior. Considers major experimental methods and principles used in solution and analysis of problems related to psychological research. Lab. *Individual research project. Prereq: Beh Sci* 211/301 *and department permission. Sem hrs:* 3 *spring.*

Beh Sci 390. *The Military in Evolving Society* 1 (1)

Examines the problems the military officer faces in successfully fulfilling dual roles as an officer and as a member of American society. Problems resulting from the changing role of the military in American society, areas of difference and similarity in military and civilian life, and conditions unique to the military situation are seen through a sociological perspective. *Problem oriented research paper and briefing. Final exam. Sem hrs:* 3 *spring.*

Beh Sci 435. *Learning* 1 (2)

Investigation of the learning process to include basic principles of learning and critical examination of learning theories. Emphasis on learning research methodology and evaluation of research on learning principles. Current applications of research and theories are reviewed. Lab. *Final exam. Prereq: Beh Sci* 211/301 *and department permission. Sem hrs:* 2½ *fall or* 3 *spring.*

Beh Sci 464. *Organizational Behavior Practicum* 1 (2)

Organizational behavior studies with practical applications of theory to exercise situations. Cadets required to develop managerial skills and techniques. Cadet teams are jointly responsible for resolution of internal and external managerial challenges. Exercises are conducted at the individual, team and section participation levels. Techniques include team-task training, group dynamics, exercises, critical incidents, role playing and a data-bank exercise. *Final exam. Sem hrs:* 2½ *fall or* 3 *spring.*

Beh Sci 470. *Human Factors and Perceptual Processes* 1 (2)

Survey of human factors in engineering with particular reference to man-machine systems. Consideration of human abilities and limitations in relation to design and development of work environments in aerospace systems. Examines the role of perceptual processes in determining orientation of the individual to the world. Emphasis on an understanding of sensory mechanisms, perceptual organization and influence of personal factors on perception. Lab. Individual research project. *Prereq: Beh Sci* 211/301, *Life Sci* 210 *and department permission. Sem hrs:* 3 *spring.*

Beh Sci 477. *Organizational and Industrial Psychology* 1 (1)

Investigation of variables affecting job performance in military and industrial environments. Emphasizes organizational psychology, personnel measurement, selection and appraisal, social considerations in a working environment, systems development, and research methodology in analysis of organizational and industrial behavior. A review of the literature or completion of an individual research project on a selected topic is required. *Final exam. Prereq: Beh Sci* 302. *Sem hrs:* 2½ *fall or* 3 *spring.*

Beh Sci 490. *Counseling* 1 (1)

Introduces student to the nature and goals of counseling. Examines the counseling relationship and the counseling process in the military environment; develops the main approaches to counseling and the theories and strategies of differing counselors. Seminar on selected issues such as professionalism, ethics and the military officer as a counselor. Practicum and mini-labs will be used to demonstrate and develop personal interactive skills as a counselor and officer. *Final exam. Prereq: Beh Sci* 211. *Sem hrs:* 2½ *fall or* 3 *spring.*

Beh Sci 495. *Special Topics* 1 (1)

Selected topics in psychology. Fall 1975 offering: Abnormal Psychology; Spring 1976 offering: Personality. *Final exam or final report. Prereq: Department permission. Sem hrs and offering time determined by department (not more than* 3 *sem hrs).*

Beh Sci 499. *Independent Study* 1 (0)

Independent research or practicum in a specific area of behavioral science. Conducted on a tutorial basis. *Term paper. Prereq:* 1/C *standing; department permission. Sem hrs:* 3 *fall or spring.*

Chemistry *(Chem)*

Offered by the Department of Chemistry

Chem 101-102. *General Chemistry* 1-1 (2-2)

Atomic structure and its relation to chemical bonding, structure and periodic law concepts. Solution chemistry including acid-base theory, equilibria, and electrochemistry. Introduction to chemical kinetics, organic chemistry, qualitative analysis and thermochemistry. Laboratory experiments in chemical principles and processes. *Final exam both semesters. Must be taken sequentially. Sem hrs: Chem* 101 — 2½ *fall; Chem* 102 — 3 *spring.*

Chem 121-122. *Principles of Chemistry* 1-1 (2-2)

Atomic, molecular, and crystalline structure. States of matter. Chemical bonding. Equilibria and kinetics of chemical processes. Solution chemistry including acid-base theory, oxidation-reduction reactions, ionic equilibria, and electrochemistry. Properties of selected elements and their compounds. Introduction to chemical thermodynamics, qualitative analysis, and organic chemistry. Laboratory experiments in chemical principles and processes. *Final exam both semesters. Must be taken sequentially. Sem hrs: Chem* 121 — 2½ *fall; Chem* 122 — 3 *spring.*

Chem 151. *Accelerated General Chemistry* 1 (2)

Atomic structure, electron orbitals and their relationship to chemical bonding and chemical reactions. Gas equilibria and acid/base theory. Behavior of gases with atmospheric considerations. Thermochemistry including electrochemical cells and energy sources. Solution equilibria and applications to water pollution and marine chemistry. Kinetics and application to nuclear decay. Introduction to organic chemistry, chemistry of pesticides and selected drugs. No laboratory experiments. Students are chosen by the department on placement examination scores. Successful completion fulfills requirements for Chem 101-102. *Final exam. Sem hrs:* 2½ *fall plus* 3 *sem hrs validation credit for Chem* 122.

Chem 222. *Analytical Chemistry* 1 (2)

Laboratory instruction in classical and modern analytical measurements, supplemented with lectures which emphasize the principles involved in the laboratory. *Final exam. Prereq: Chem* 102, 122 *or* 151. *Sem hrs:* 3 *spring.*

Chem 233. *Organic Chemistry I* 1 (1)

Classification and naming of organic compounds, reactions of aliphatic and aromatic compounds, stereochemistry, introduction to resonance, spectroscopy, and reaction mechanisms. *Final exam. Prereq: Chem* 102, 122 *or* 151. *Concurrent enrollment in Chem* 243 *is recommended but is optional for non-chemistry majors. Sem hrs:* 2½ *fall.*

Chem 234. *Organic Chemistry II* 1 (1)

Continuation of the reactions of aliphatic and aromatic compounds and reaction mechanisms. Introduction to carbohydrates, polynuclear aromatics, heterocyclic compounds, amino acids and proteins, and multi-step syntheses. *Final exam. Prereq: Chem* 233. *Concurrent enrollment in Chem* 244 *is recommended but is optional for non-chemistry majors. Sem hrs:* 3 *spring.*

Chem 243. *Organic Chemistry I Lab* 1 (2)

Experiments in the preparation, purification and identification of typical organic compounds. Introduction to natural product extractions, infrared spectroscopy, and other instrumental techniques applicable to organic compounds. *Final exam. Prereq: Completed or enrolled in Chem* 233. *Sem hrs:* 2 *fall.*

Chem 244. *Organic Chemistry II Lab* 1 (2)

Experiments in qualitative organic analysis. Preparation, purification and identification of aromatic compounds, utilizing organic name reactions. *Final exam. Prereq: Chem* 243; *completed or enrolled in Chem* 234. *Sem hrs:* 2½ *spring.*

Chem 333. *Instrumental Analysis* 1 (2)

Theory and use of common analytical and research instruments. Subjects include: visible-ultraviolet emission and absorption spectroscopy, infrared spectroscopy, nuclear magnetic resonance, x-ray, mass spectrometry, gas chromatography, and electrochemical techniques. Lab. *Final exam. Prereq: Chem* 222 *or completed or enrolled in Chem* 335. *Sem hrs:* 2½ *fall.*

Chem 335. *Physical Chemistry I* 1 (1)

Chemical thermodynamics and equilibria; properties of gases, liquids, and solutions; phase equilibria; electrochemistry. *Final exam. Prereq: Chem* 102, 122 *or* 151; *completion of any core math sequence. Sem hrs:* 2½ *fall.*

Chem 336. *Physical Chemistry II* 1 (1)

Chemical kinetics, surface chemistry, ionic equilibria, introduction to quantum theory, molecular structure, and spectroscopy. *Final exam. Prereq: Chem* 335. *Sem hrs:* 3 *spring.*

Chem 344. *Physical Chemistry Lab* 1 (2)

Laboratory experiments including molecular weight determinations; physical and thermodynamic properties of gases and liquids; thermochemistry of reactions and solutions; one, two, and three component phase equilibria; homogeneous and heterogeneous chemical equilibria; colligative properties of solutions; electrochemistry; transport phenomena in solutions; surface phenomena. Precision of measurement, statistical treatment of data and graphical techniques are emphasized. *Final exam. Prereq: Chem* 335; *completed or enrolled in Chem* 336. *Sem hrs:* 2½ *spring.*

Chem 381. *Chemistry of the Environment* 1 (1)

Discussion of the nature, chemistry and alteration of the environment. Major areas of study include atmospheric and water pollution, waste disposal, geochemistry, limnology, oceanography, and special topics of current or regional interest. Emphasis placed on understanding the chemical principles and reactions involved in protecting and improving our environment. *Final exam and report. Prereq:* 1/*C or* 2/*C standing. Sem hrs:* 3 *spring.*

Chem 431. *Theoretical Inorganic Chemistry* 1 (1)

Theoretical approach to atomic structure, covalent bonding and molecular structure; ionic compounds and coordination compounds; oxidation potentials; acid-base theories; non-aqueous solvents. *Final exam. Prereq: Chem* 336. *Sem hrs:* 2½ *fall.*

Chem 432. *Systematic Inorganic Chemistry* 1 (1)

Applications of Chem 431 with emphasis on a systematic study of the behavior of chemical elements and their inorganic compounds. Chemistry of transition metals, organometallics, boron, bioinorganics, and special topics. *Final exam. Prereq: Chem* 431. *Sem hrs:* 3 *spring.*

Chem 433. *Advanced Organic Chemistry* 1 (1)

Molecular structure including resonance, stereochemistry and aromaticity. Inductive and steric effects on reaction rate and mechanisms. Application to nucleo-

philic substitutions, eliminations and other reaction types. *Final exam. Prereq: Chem* 234. *Sem hrs:* 2½ *fall.*

Chem 434. *Biochemistry* 1 (1)

Chemistry of life processes including comparative biochemistry; chemical nature of biomolecules (carbohydrates, lipids, amino acids and proteins, nucleic acids and their components, porphyrins, chlorophyll, and enzymes); catabolism and anabolism; metabolic regulation; protein synthesis; biochemical genetics. The areas of vitamins, coenzymes and enzyme cofactors, steroids, and mineral metabolism are covered as intimate parts of the mechanisms of the metabolic pathways. *Final exam. Prereq: Chem* 234. *Sem hrs:* 3 *spring.*

Chem 435. *Advanced Physical Chemistry* 1 (1)

Classical chemical thermodynamics. Extension of basic principles to real systems. Topics treated include gases, electrolytic and nonelectrolytic solutions, surface systems, and galvanic cells. *Final exam. Prereq: Math* 351; *completed or enrolled in Chem* 336. *Sem hrs:* 2½ *fall.*

Chem 443. *Advanced Physical Chemistry Lab* 1 (2)

Laboratory experiments including atomic and molecular properties; chemical kinetics; spectroscopy; radiochemical tracer techniques; high vacuum techniques. The use of modern instrumentation is emphasized. *Final exam. Prereq: Chem* 336 *and* 344. *Sem hrs:* 2 *fall.*

Chem 495. *Special Topics* 1 (1)

Selected topics in chemistry. *Final exam or final report. Prereq: Department permission. Sem hrs and offering time determined by department (not more than* 3 *sem hrs).*

Chem 499. *Independent Study* 0-2 (0)

Individual research under the direction of a faculty member. Includes use of chemical literature. *No final. Prereq: Chem* 244 *and* 344; *department permission. Sem hrs:* 1 *to* 5 *fall or spring.*

Civil Engineering *(Civ Engr)*

Offered by the Department of Civil Engineering, Engineering Mechanics and Materials

Civ Engr 340. *Surveying* 1 (2)

Plane surveying and use of basic equipment including chain, level, transit, theodolite, and plane table alidade. Field problems in measurement of distance, leveling, line direction, angle measurement, horizontal curves, and topography. Introduction to photogrammetry. *Final exam. Sem hrs:* 2½ *fall.*

Civ Engr 352. *Water Supply and Waste Disposal* 1 (1)

Design of systems for the collection, treatment and distribution of water and for the collection, treatment and disposal of waste water. *Final exam. Prereq: Civ Engr* 366. *Sem hrs:* 3 *spring.*

Civ Engr 366. *Fundamental Hydraulics* 1 (1)

Application of the principles of incompressible fluid mechanics. Forces on submerged bodies, dams, potential flow, conduit flow, open-channel flow, dynamic similitude and turbomachinery. Laboratories in headloss determination and flow measurement. *Final exam. Prereq: Completed or enrolled in Mech* 361. *Sem hrs:* 2½ *fall.*

Civ Engr 432. *Construction Engineering* 1 (1)

Construction as an industry, types of construction, construction methods, equipment, materials, methods of cost estimating and scheduling. Introduction to plans and specifications, building codes and standards. The professional practice of engineering. *Final exam. Sem hrs:* 2½ *fall.*

Civ Engr 441. *Soil Mechanics* 1 (2)

Engineering properties of soils and shear strength of cohesive and cohesionless soils; consolidation of soils and settlement of structures; stress distribution; lateral earth pressures on structures; ultimate bearing capacity; principles of foundation design. Selected laboratory exercises in soil testing. *Final exam. Prereq: Completed or enrolled in Mech* 362. *Sem hrs:* 3 *spring.*

Civ Engr 442. *Foundation Engineering* 1 (1)

Effects of sub-soil conditions and the behavior of soils on foundation type. Analysis and design of footings, pile foundations, retaining walls, piers, abutments, sheet piling, and pavement foundations. *Final exam. Prereq: Civ Engr* 441; *completed or enrolled in Civ Engr* 455. *Sem hrs:* 2½ *fall.*

Civ Engr 450. *Properties of Materials Laboratory* 1 (2)

Behavior of construction materials and structural members. Review of statics and introduction to beam and column design. Principles of testing machines and measuring devices. Application of American Society for Testing and Materials (ASTM) standard

techniques to demonstrate behavior of structural materials. *No final. Prereq: Mech* 362. *Sem hrs:* 3 *spring.*

Civ Engr 451. *Structural Analysis* 1 (1)

Behavior of statically determinate beams, frames and trusses due to various loadings and deflections. Development of qualitative and quantitative influence lines. Deflection calculations by moment area and virtual work methods. Analysis of statically indeterminate structures by moment distribution, slope deflection and consistent deformation techniques. Introduction to approximate methods of frame analysis. *Final exam. Prereq: Mech* 362. *Sem hrs:* 3 *spring.*

Civ Engr 453. *Structural Steel Design* 1 (1)

Design of structural steel elements including tension members, compression members, beams, and beam columns. Riveted, bolted and welded connnections are used in design applications. Introduction to plastic design of beams and frames. *Final exam. Prereq: Civ Engr* 451. *Sem hrs:* 2½ *fall.*

Civ Engr 454. *Structural Dynamics* 1 (1)

Analysis of structures under dynamic loads. Rigorous analysis of single- and multi-degree-of-freedom systems including the development and use of response spectra. Introductory coverage of numerical and graphical integration, distributed mass systems, and elastoplastic behavior. *Final exam. Prereq: Civ Engr* 451. *Sem hrs:* 3 *spring.*

Civ Engr 455. *Reinforced Concrete Design* 1 (1)

Design of reinforced concrete structural elements such as beams, columns, footings and slabs. Flexure, shear, tensile, compressive, anchorage, bond, creep, and temperature change stresses are included in design problems. Ultimate strength design theory is emphasized. *Final exam. Prereq: Civ Engr* 451. *Sem hrs:* 2½ *fall.*

Civ Engr 456. *Structural Engineering* 1 (2)

Design of a complete, multi-story steel and reinforced concrete building, including structural frame, floor system, wall system and foundations. Determination of design loads on multi-story structures. Use of the digital computer for determination of internal forces due to design loads. *Final report. Prereq: Civ Engr* 441, 453 *and* 455. *Sem hrs:* 3 *spring.*

Civ Engr 461. *Air Base Engineering* 1 (1)

Principles of planning, land use, regulatory measures, design considerations for airport and aviation system facilities emphasizing the interface of the aviation system with the urban and natural environment. Topics include airspace criteria, geometric design of airfields, zoning, noise abatement and pollution control. *Final exam. Sem hrs:* 3 *spring.*

Civ Engr 464. *Civil Engineering Design* 1 (2)

Individual or group design of civil engineering projects in the areas of structural, soils and environmental engineering design. Indvidual laboratory, experimental or analytic investigation in support of civil engineering design. Specialized topics in structural steel design, reinforced concrete design, structural dynamics, soil dynamics, aerospace facilities design, environmental quality control design, architectural design, and air base master planning may be studied. Students are individually supervised but must formulate their own investigation techniques and conclusions. *Final report. Prereq:* 1/*C standing; engineering or science major; department permission. Sem hrs:* 4 *fall or spring.*

Civ Engr 482. *Applied Wastewater Engineering* 1 (1)

Fundamentals of aquatic ecology and natural cycles in the biosphere are reviewed with special emphasis placed on receiving stream management and the design of sewage treatment plants. Topics include wastewater toxicity, receiving stream waste assimilation capacity, stream and effluent standards, aeration, activated sludge, aerated lagoons, waste stabilization ponds, and anaerobic sludge digestion. *Final exam. Prereq: Civ Engr* 352. *Sem hrs:* 3 *spring.*

Civ Engr 495. *Special Topics* 1 (1)

Selected topics in civil engineering. Final exam or final report. *Prereq: Department permission. Sem hrs and offering time determined by department (not more than* 3 *sem hrs).*

Civ Engr 499. *Independent Study* 0-1 (0)

Individual study and research in an advanced civil engineering topic approved by the department head. *Final report. Sem hrs:* 1 *to* 3 *fall or spring.*

Computer Science *(Comp Sci)*

Offered by the Department of Astronautics and Computer Science

Comp Sci 200. *Basic Programming* 1 (1)

General theory of stored programs and programming with emphasis on methods of numerical analysis, optimization, information storage and retrieval. Preparation and execution of programs on the computer. *Final exam. Prereq:* 3/*C standing or department permission. Sem hrs:* 2½ *fall or* 3 *spring.*

Comp Sci 362. *Computer Simulation* 1 (1)

Theory of system modeling and computer simulation; simulation languages; queuing theory. Includes preparation of several computer programs and a group study of a real world problem. *Final report. Prereq: Math* 357 *or Mgt* 331; *Comp Sci* 200. *Sem hrs:* 3 *spring.*

Comp Sci 380. *Data Structures* 1 (1)

Basic concepts of data; description, representation and manipulation of information structures; basic operations on list structures and strings; file organization; data structures in programming languages.

Preparation and execution of programs on the computer. *Final project. Prereq: Comp Sci* 200. *Sem hrs:* 2½ *fall or* 3 *spring.*

Comp Sci 381. *Computers and Programming* 1 (1)

Characteristics and organization of computers; computer languages; specific exercises in digital computer programming at an intermediate level. Programs are written in assembly language and higher level languages such as ALGOL, FORTRAN, and COBOL emphasizing improvement of programming techniques, applications and advanced capabilities of the languages. Preparation and execution of computer programs. *Final exam. Prereq: Comp Sci* 200. *Sem hrs:* 2½ *fall or* 3 *spring.*

Comp Sci 463. *Information Retrieval* 1 (1)

Techniques of designing and implementing data management systems including file organization, file maintenance, retrieval, selection of computer systems, and data structures. Includes individual preparation of computer programs and a group project designing an information system. *Final report. Prereq: Comp Sci* 380; *completed or enrolled in Comp Sci* 381. *Sem hrs:* 3 *spring.*

Comp Sci 483. *Operating Systems* 1 (1)

Design of supervisors for large multiprocessing systems. Topics include virtual memory, resource management and allocation, concurrent processes, protection, file systems, batch and interactive subsystems. *Final report. Prereq: Comp Sci* 381. *Sem hrs:* 2½ *fall.*

Comp Sci 484. *Programming Systems* 1 (1)

Translators and interpreters for high-level programming languages. Program organization, grammars, scanners and recognizers. Design and construction of a syntax-directed compiler. *Final report. Prereq: Comp Sci* 380, 381, *Philos* 370. *Sem hrs:* 3 *spring.*

Comp Sci 485. *Computer Architecture* 1 (1)

Logical design of computers and machine organization. The course examines the functional basis of various computer structures including memory devices, word structure and addressing, arithmetic units, and input/output equipment. Recent advances in computer organization. Includes several computer projects to illustrate basic concepts. *Final report. Prereq: Comp Sci* 200. *Sem hrs:* 2½ *fall.*

Comp Sci 495. *Special Topics* 1 (1)

Selected topics in computer science. *Final exam or final report. Prereq: Department permission. Sem hrs and offering time determined by department (not more than* 3 *sem hrs).*

Comp Sci 499. *Independent Study* 1-2 (0)

Individual study and research supervised by a faculty member. Topic established with the department head. *Final report. Sem hrs:* 2 *to* 6 *fall or spring.*

Economics *(Econ)*

Offered by the Department of Economics, Geography and Management

Econ 211. *Economic Principles and Problems* 1 (1)

Emphasizes economic principles and problems relevant to the mixed enterprise economy of the United States. Includes macroeconomic analysis of national income determination and stabilization. *Final exam. Sem hrs:* 2½ *fall or* 3 *spring. (Cadets taking Econ* 211 *in the fall must take Econ* 212 *in a spring semester. Cadets taking Econ* 211 *in the spring must take Econ* 212 *in a fall semester.)*

Econ 212. *Economics of National Security* 1 (1)

Emphasizes the application of theoretical analysis to achieve efficient allocation of resources in the nation's defense effort. Includes traditional microeconomics. Demand theory, production theory, and theory of the firm are analyzed. *Final exam. Prereq: Econ* 211; *completed prior to the fifth semester. Sem hrs:* 2½ *fall or* 3 *spring.*

Econ 333. *Price Theory* 1 (1)

Traditional microeconomic theory emphasizing the principles of product and factor pricing, allocation and employment of resources, and the implications of varying market structures. Investigates the usefulness of price theory in decision making. *Final exam. Prereq: Econ* 212. *Sem hrs:* 2½ *fall or* 3 *spring.*

Econ 350. *International Economics* 1 (1)

Economic aspects of international relations. Includes the theory of international trade, relationships between national currencies under alternative international monetary systems, the balance of payments, commercial policy, and economic warfare. *Final exam. Prereq: Econ* 212. *Sem hrs:* 2½ *fall.*

Econ 351. *Comparative Economic Systems* 1 (1)

Comparisons of the economic organization and institutions, and their impact on economic variables in Capitalistic, Market Socialistic, and Command econ-

omies. Historical and ideological backgrounds, industry labor, resources, trade, transportation, and problems of planning and rapid industrialization. Emphasizes the agricultural sectors, roles of the industrial manager, and the problems of incentives in the Soviet, Chinese, and European economies. *Final exam. Prereq: Econ* 212. *Sem hrs:* 2½ *fall.*

Econ 373. *Public Finance* 1 (1)

Nature of the private and public sectors; theory of public expenditures; nature of the budget system; sources of public revenues, principles and problems of taxation, personal income taxation, corporate income taxation, state and local taxation; theory of expenditure taxation. *Final exam. Prereq: Econ* 212. *Sem hrs:* 2½ *fall.*

Econ 374. *Survey of International Economic Issues* 1 (1)

Examination of current issues in the commercial relations between advanced nations and in the relations between those nations and less-developed countries. Topics include the growth of international economic interdependence and the effects of tariffs and non-tariff barriers to trade, effects and problems of regional integration, and international capital movements. This course is designed for cadets who are not majoring in either economics or management. *Final exam. Prereq: Econ* 212. *Sem hrs:* 2½ *fall or* 3 *spring.*

Econ 375. *Monetary Economics* 1 (1)

Fundamental monetary concepts, history and development of financial institutions, and instruments of monetary economics. Use of tools and techniques of economic theory; analysis of determinants of interest rates and credit availability with special emphasis on current domestic and international issues of monetary policy. Field trip required. *Final exam. Prereq: Econ* 212. *Sem hrs:* 3 *spring.*

Econ 452. *Economic Problems of Developing Areas* 1 (1)

Theory and policy of economic development. Examination of classical and modern theories of development. The problems of accelerating development in developing countries and maintaining growth in advanced economies. *Final exam. Prereq: Econ* 212. *Sem hrs:* 3 *spring.*

Econ 456. *Macroeconomic Theory* 1 (1)

Analysis of the determination of level of national income and employment in terms of national income accounting and aggregative theory. Treats classical, Keynesian, and neo-Keynesian theories of income level, fluctuation, and growth. Evaluation of various economic policies designed to promote economic stability. *Final exam. Prereq: Econ* 212. *Sem hrs:* 3 *spring.*

Econ 465. *Introduction to Econometrics* 1 (1)

Application of statistical tools to economic data. Includes methodology, econometric model building, and statistical inference. Emphasizes the application of econometric theory to original empirical problems. *Final exam. Prereq: Econ* 212; *Mgt* 331 *or Math* 358. *Sem hrs:* 2½ *fall.*

Econ 466. *Seminar in Econometrics* 1 (2)

Continues development of model building and analytical tools and stresses their application to economic problems. Emphasizes individual and original research. *Final exam. Prereq: Econ* 465. *Sem hrs:* 3 *spring.*

Econ 472. *Seminar in International and Development Economics* 1 (2)

A study of prominent major issues in international and development economics, utilizing economic theory in their analysis. Lectures on the relevant theory and area case studies. Emphasis on significant student participation in the form of research, presentation and discussion of papers. Student research may be oriented toward any geographical or theoretical area of interest in the realms of development and international economics. *Final exam. Prereq: Econ* 350, *Econ* 452, *Econ* 374 *or department permission. Sem hrs:* 3 *spring.*

Econ 477. *Defense Economics* 1 (2)

Microeconomic methodology of systems analysis and cost effectiveness as involved in defense decision making; macroeconomic implications of the Cold War, active warfare, R&D and procurement expenditures, arms control, and disarmament. Readings supplemented by a schedule of lectures by top defense analysts. Individual or group research into some area of defense economics is required. *Final exam. Prereq: Econ* 212 *and department permission. Sem hrs:* 3 *spring.*

Econ 479. *Policy Issues in Contemporary Economics* 1 (2)

Application of economic theory to contemporary economic issues and policies. Includes methodology, income and employment, urban issues, racial discrimination, education, migration, income maintenance, and other selected domestic issues. *Final exam. Prereq: Econ* 212; *department permission. Sem hrs:* 2½ *fall.*

Econ 495. *Special Topics* 1 (2)

Selected topics in economics. *Final exam or final report. Prereq: Department permission. Sem hrs and offering time determined by department (not more than* 3 *sem hrs).*

Econ 499. *Independent Study* 1-2 (0)

Tutorial investigation of a specific area of economics. *Final report. Sem hrs:* 2 *to* 5 *fall or spring.*

Electrical Engineering *(El Engr)*

Offered by the Department of Electrical Engineering

El Engr 331. *Electronic Signals and Systems I* 1 (2)

Emphasizes the principles and problems relevant to the processing of information by electronic means.

Includes signal representation in the time and frequency domain and information content of signals. Also includes the characteristics and limitations of both digital and analog microsystem signal processors. Lab. *Final exam. Prereq: Completed or enrolled in Math* 221. *Sem hrs:* 2½ *fall or* 3 *spring.*

El Engr 332. *Electronic Signals and Systems II* 1 (2)

Continuation of El Engr 331. Emphasizes the characteristics and limitations of both digital and analog macrosystems with application to communications, instrumentation, avionics, simulation and other areas. Lab. *Final exam. Prereq: El Engr* 331 *in the preceding semester. Sem hrs:* 2½ *fall or* 3 *spring.*

El Engr 341. *Introduction to Electronics* 1 (1)

Circuit analysis, diodes, transistors and other semiconductor devices, filters, and linear and digital integrated circuits. Lab. *Final exam. Prereq: Completed or enrolled in El Engr* 331. *Sem hrs:* 2½ *fall or* 3 *spring.*

El Engr 342. *Electronic Devices* 1 (1)

Theory and applications of semiconductor materials, devices, and integrated circuits with emphasis on principles of operation. Lab. *Final exam. Prereq: El Engr* 341. *Sem hrs:* 2½ *fall or* 3 *spring.*

El Engr 343. *Fundamentals of Electromagnetic Fields* 1 (1)

Classical boundary value problems in static electric and magnetic fields. Introduction to time-changing fields. Relationship established between field and circuit theory. Lab. *Final exam. Prereq: Physics* 212. *Sem hrs:* 2½ *fall.*

El Engr 344. *Electromagnetic Transmission and Radiation* 1 (1)

Maxwell's equations and their application to transmission lines, waveguides, and antennas. Plane waves in dielectric and conducting media. Lab. *Final exam. Prereq: El Engr* 343. *Sem hrs:* 3 *spring.*

El Engr 345. *Computer Analysis of Continuous Systems* 1 (1)

Analysis and simulation of continuous-time dynamic systems using analog computers. Topics covered from the standpoint of continuous-time variables with the analog computer as the basic computational tool. Applications from a variety of engineering disciplines. Lab. *Final exam. Prereq: Completed or enrolled in El Engr* 331. *Sem hrs:* 2½ *fall or* 3 *spring.*

El Engr 346. *Signal and Systems Analysis* 1 (1)

Signal representation in terms of singularity functions, orthogonal functions, and Fourier series. System representation in terms of convolution and Fourier and Laplace transforms. Includes time and frequency domains, inverse transformation and introductory filter synthesis. Lab. *Final exam. Prereq: El Engr* 341. *Sem hrs:* 3 *spring.*

El Engr 381. *The Digital Computer as a Laboratory Instrument* 1 (1)

Real time use of digital computers in hybrid instrumentation and control. "Hands-on" experience is provided using a computer as a dedicated system component for real-time data acquisition, control, automated testing, real-time transforms, and signal processing. The introductory material covers machine organization and operation, machine language programming, and interrupt processing. Lab. *Final project. Prereq: Comp Sci* 200 *or department permission. Sem hrs:* 2½ *fall or* 3 *spring.*

El Engr 441. *Instrumentation Systems* 1 (1)

Principles of modern data acquisition instrumentation including metrology, transducers, sensors, displays, and digital and linear instrumentation data systems organization and operation. Lab. *Final exam. Prereq: El Engr* 332 *or* 341. *Sem hrs:* 2½ *fall or* 3 *spring.*

El Engr 445. *Computer Analysis of Discrete Systems* 1 (1)

Analysis of discrete-time signals and dynamic systems. Topics include sampling theory, z-transforms, digital filtering, the discrete Fourier Transform, the fast Fourier transform, and microcomputer implementation of signal processing algorithms. Lab. *Final exam. Prereq: El Engr* 331. *Sem hrs:* 2½ *fall or* 3 *spring.*

El Engr 447. *Communications Systems* 1 (1)

Techniques of modern communications including modulation, demodulation, sampling, and multiplex systems. Statistical communications including probability, random processes, signal detection, noise, information and coding theory. Lab. *Final exam. Prereq: El Engr* 346. *Sem hrs:* 2½ *fall.*

El Engr 464. *Design* 1 (1)

Applications of the basic principles of design and project engineering to applied problems in electrical engineering. Includes such topics as technical proposals, contracts, project engineering, and advanced systems design. Area of emphasis depends on preparatory courses and interests of cadet. Lab. *Final report. Prereq: Department permission. Sem hrs:* 4 *fall and spring.*

El Engr 480. *Studies in Military Electronics* 1 (1)

An introductory course in military electronics for nonelectrical engineering majors. Course topics selected from such areas as electronic warfare, radar, Air Force communications, etc. *Final exam. Prereq: El Engr* 332 *or* 341. *Sem hrs:* 2½ *fall or* 3 *spring.*

El Engr 481. *Studies in Applied Electronics* 1 (1)

An introductory course in the applied aspects of electronics for nonelectrical engineering majors. Course topics selected from such areas as stereo systems, television systems, aircraft electrical systems.

Lab. *Term project. Prereq: El Engr* 332 *or El Engr* 341 *and department permission. Sem hrs:* 2½ *fall or* 3 *spring.*

El Engr 484. *Advanced Electronics* 1 (1)

Modern circuit design utilizing both linear and digital integrated circuits. System design and analysis using such techniques as D/A and A/D conversion, multiplexing, numerical control, majority voting and digital communications. Extensive laboratory involvement. Lab. *Final project. Prereq: El Engr* 341. *Sem hrs:* 2½ *fall or* 3 *spring.*

El Engr 487. *Topics in Real Time Computation* 1 (1)

Selected topics in hybrid and real time computation using a large scale hybrid computer system. Lab. *Final exam. Prereq: El Engr* 345, *El Engr* 381 *or Sci* 350. *Sem hrs:* 2½ *fall or* 3 *spring.*

El Engr 495. *Special Topics* 1 (1)

Selected topics in electrical engineering. *Final project. Prereq: Department permission. Sem hrs and offering time determined by department (not more than* 3 *sem hrs).*

El Engr 499. *Independent Study* 1-2 (0)

Individual study and research in an engineering design topic approved by the department head. *Final paper and oral report. Sem hrs:* 2½ *to* 6 *fall or spring.*

English *(English)*

Offered by the Department of English and Fine Arts

English 001. *English as a Second Language* 0 (0)

A tutorial course for fourth class Allied Students to increase oral and written competencies requisite for completion of English 111 and 112. Pass/Fail grades to be entered on student's transcript. *No final. Noncredit. Sem hrs:* 0 *summer.*

English 111. *Composition and Literature* 1 (1)

Introduction to rhetoric and literature with frequent practice in composition. *Final exam. Sem hrs:* 2½ *fall.*

English 112. *Composition and Literature* 1 (1)

Continuation of English 111. *Final exam. Prereq: English* 111. *Sem hrs:* 3 *spring.*

English 340. *English Novel* 1 (1)

Tutorial course in the reading of representative novels written in English. *Final exam. Prereq: English* 112. *Sem hrs:* 2½ *fall or* 3 *spring.*

English 352. *American Literature* 1 (1)

Reading of the representative work of major American writers. Includes a survey of principal forms and periods from pre-Colonial times through the present. *Final exam. Prereq: English* 112. *Sem hrs:* 2½ *fall or* 3 *spring.*

English 353. *Shakespeare* 1 (1)

Intensive study of several of Shakespeare's major plays. *Final exam. Prereq: English* 112. *Sem hrs:* 2½ *fall or* 3 *spring.*

English 360. *Classical Readings* 1 (1)

Tutorial course in Greek, Roman, and Medieval Literature. Investigation of the origins of literary forms such as biography, epic, satire, history, essay, and heroic romance. Preliminary study of Greek, Roman, Nordic, and European mythologies, and the sagas of medieval heroes such as Arthur, El Cid, and Gawain. *Final exam. Prereq: English* 112. *Sem hrs:* 2½ *fall or* 3 *spring.*

English 370. *Speech* 1 (2)

Instruction and practice in public address, including informative, argumentative, and persuasive speaking. Emphasizes a workshop approach with individual coaching; frequent audio and video taping sessions. Open to all cadets. *No final. Prereq: English* 112. *Sem hrs:* 2½ *fall or* 3 *spring.*

English 406. *Western World Literature* 1 (1)

Detailed analysis of important human values embodied in selected western world masterpieces from the Renaissance through the moderns. *Final exam. Prereq: English* 112. *Sem hrs:* 2½ *fall or* 3 *spring.*

English 430. *Technical Writing and Speech* 1 (1)

Practical workshop approach to the study of communicating technical information. Frequent exercises to develop effective style and skill in audience analysis and to provide ground work for a report and briefing in the cadet's major scientific or engineering field. *Final report. Prereq: English* 112; *Engineering and Basic Science majors. Sem hrs:* 2½ *fall or* 3 *spring.*

English 431. *English Literature* 1 (1)

Reading of the best work of major British writers. Includes a survey of the principal forms and periods of English literature from early times through modern. *Final exam. Prereq: English* 112. *Sem hrs:* 2½ *fall or* 3 *spring.*

English 442. *Modern Literature* 1 (1)

A representative study of modern literature drawn from European, British, African, Canadian, Latin American, and American authors, usually emphasizing but not restricted to novels. *Final exam. Prereq: English* 112. *Sem hrs:* 2½ *fall or* 3 *spring.*

English 444. *The American Novel* 1 (1)

Reading of representative nineteenth and twentieth century novels to identify themes, movements, and techniques used by American authors. Works selected from major writers such as Hawthorne, Melville, Twain, Fitzgerald, Hemingway, and Faulkner, supplemented with modern works by such novelists as Bellow and Ellison. *Final exam. Prereq: English* 112. *Sem hrs:* 2½ *fall or* 3 *spring.*

English 450. *Advanced Composition and Speech* 1 (1)

Practice in the rhetoric of professional communication: short written exercises illustrate normal Air Force writing requirements; a long paper stresses advanced research techniques and stylistic approaches; in-class briefings develop the personal aspect of communication. *Final report. Prereq: English* 112; *Humanities and Social Science majors. Sem hrs:* 2½ *fall or* 3 *spring.*

English 495. *Special Topics* 1 (1)

Selected special topics in English. Previous topics have included Satire, Black Literature, War and Its Aftermath, The Literature of the Supernatural, and Creative Writing. Fall 1975 offering: Science Fiction. Spring 1976 offering: The Literature of Film. *Final exam. Prereq: English* 112. *Sem hrs and offering time determined by department (not more than* 3 *sem hrs).*

English 499. *Independent Study* 1 (0)

Study and research in literature or creative writing. Subject and meetings arranged with the instructor. *Final report. Prereq: Department permission. Sem hrs:* 2½ *fall or* 3 *spring.*

Fine Arts *(Fine Arts)*

Offered by the Department of English and Fine Arts

Fine Art 105, 205, 305, 405. *Drum and Bugle Corps* 0 (0)

Introduction to military music traditions and procedures. Intensive rehearsal and drill in techniques of precision marching while playing. Instruction and participation in planning public performances. Cadets in Fine Art 205 and 305 assume responsibility for section leadership and lower echelons of command. Cadets in Fine Art 405 assume upper echelon leadership and command of corps. Upon withdrawal or completion, cadets will participate in squadron competitive athletics. *Pass/Fail. No final. Prereq: Audition and department permission. Sem hrs:* 1 *fall.*

Fine Art 451. *Introduction to the Visual Arts* 1 (1)

Discussion and analysis of major art concepts, artists, and styles. Emphasis on development of potential for esthetic and creative experience, including a brief survey of the evolution of art styles and a studio project in painting. Demonstrated artistic ability or prior knowledge of art not required. *Final exam. Prereq: None. Sem hrs:* 2½ *fall or* 3 *spring.*

Fine Art 458. *Music Appreciation* 1 (1)

Survey of music of the Western world through a study of basic elements, forms, and styles in representative works by major composers. Emphasis on listening, understanding, and appreciation. Voluntary field trips to selected area concerts. Technical knowledge or talent in music not required. *Final exam. Prereq: None. Sem hrs:* 2½ *fall or* 3 *spring.*

Fine Art 460. *Fine Arts Studio* 1 (2)

Introductory experiences in design, graphics, painting, sculpture, and mass communications. Media explored are woodcuts, etchings, oils, synthetics, wood, stone, bronze, and direct metal. Prior experience in artistic media not required. *No final. Prereq: Fine Art* 451 *or Fine Art* 477. *Sem hrs:* 3 *spring.*

Fine Art 477. *American Art and Music* 1 (1)

Survey from the Colonial period to the present. Considers American aspects of music and art, with reference to visual and aural communication, regional and national means of expression, and the influence of American currents of thought on specific periods and individual styles, including contemporary artists and composers. Technical knowledge or ability in music or art not required. *Final exam. Prereq: None. Sem hrs:* 2½ *fall.*

Fine Art 499. *Independent Study* 1 (0)

Independent study in the field of art or music. Subject and meetings arranged with the instructor. *No final. Prereq: For visual art, Fine Art* 451 *and Fine Art* 460 *plus department permission; for music, Fine Art* 458 *and department permission. Sem hrs:* 2½ *fall or* 3 *spring.*

Foreign Languages *(Chinese, French, German, Japanese, Russian, and Spanish)*

Offered by the Department of Foreign Languages

For Lang 101-102: 1-1 (2-2)

Chinese 101-102 — *Elementary Chinese*
French 101-102 — *Elementary French*
German 101-102 — *Elementary German*

Japanese 101-102 — *Elementary Japanese*
Russian 101-102 — *Elementary Russian*
Spanish 101-102 — *Elementary Spanish*

Elementary foreign language study with emphasis on the communicative skills. Inductive pattern drills, aural recognition exercises and structural analysis; reading of simple target language texts. Introduction to contemporary culture and civilization. Language laboratory supplements classroom instruction. Students are placed in course based on placement examination scores (see Supplemental Information). *Final exam both semesters. Must be taken sequentially. Sem hrs: For Lang* 101 — 2½ *fall; For Lang* 102 — 3 *spring. Cadets must complete the For Lang* 101-102 *sequence in one language to satisfy the core language requirement.*

For Lang 121-122: 1-1 (2-1)

French 121-122 — *Applied Elementary French*
German 121-122 — *Applied Elementary German*
Russian 121-122 — *Applied Elementary Russian*
Spanish 121-122 — *Applied Elementary Spanish*

Basic foreign language study with emphasis on the communicative skills and aural/reading comprehension. Drills in grammar, syntax and structure of contemporary target language. Introduction to contemporary culture and civilization of language studied. Language laboratory, video grammar and culture capsules supplement classroom instructions. Students are placed in the course based on placement examination scores (see Supplemental Information). *Final exam both semesters. Sem hrs: For Lang* 121 — 2½ *fall; For Lang* 122 — 3 *spring. Must be taken sequentially. Cadets must complete two semesters of basic language study in one of the four languages to satisfy core language requirement.*

For Lang 151: 1 (2)

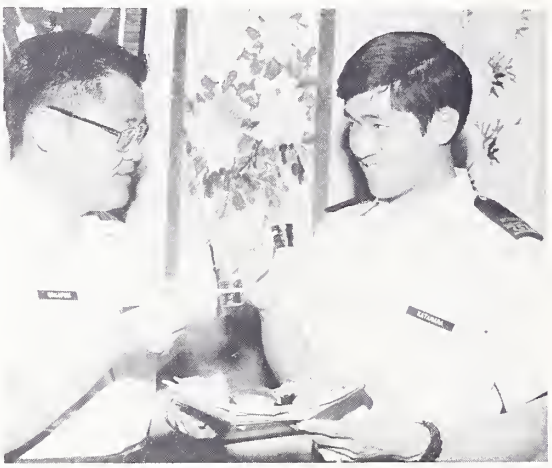
French 151 — *Accelerated Elementary French*
German 151 — *Accelerated Elementary German*
Spanish 151 — *Accelerated Elementary Spanish*

Intensive basic foreign language study with emphasis on communicative skills and aural/reading comprehension. Review of basic grammar, syntax and structure of contemporary target language. Introduction to culture and civilization of language studied. Language laboratory and video culture capsules supplement classroom instruction. Students are placed in course based on placement examination scores. (See Supplemental Information). *Final exam. Sem hrs: 2½ fall plus 3 sem hrs validation credit for For Lang* 102. *Successful completion fulfills requirements for For Lang* 101-102.

For Lang 253: 1 (1)

Chinese 253 — *Intermediate Chinese*
French 253 — *Intermediate French*
German 253 — *Intermediate German*
Japanese 253 — *Intermediate Japanese*
Russian 253 — *Intermediate Russian*
Spanish 253 — *Intermediate Spanish*

Review of grammar and structure of contemporary target language with emphasis on grammatical and syntactical accuracy in both speech and writing. Intensification of aural and reading comprehension. Student talks and classroom discussions based on selected readings in culture and civilization of language studied. Language laboratory supplements classroom instructions. *Final exam. Prereq: Grade of C or better in For Lang* 102 (122 *or* 151) *or department permission. Sem hrs:* 2½ *fall or* 3 *spring.*



For Lang 254: 1 (1)

Chinese 254 — *Intermediate Chinese*
French 254 — *Intermediate French*
German 254 — *Intermediate German*
Japanese 254 — *Intermediate Japanese*
Russian 254 — *Intermediate Russian*
Spanish 254 — *Intermediate Spanish*

Continuation of essential elements of language structure. Emphasis on conversational practice and aural comprehension of contemporary spoken language. Student talks and classroom discussions based on culture and civilization readings/topics in target language. Language laboratory supplements classroom instruction. *Final exam. Prereq: Grade of C or better in For Lang* 253 *or department permission. Sem hrs:* 2½ *fall or* 3 *spring.*

For Lang 255: 1 (1)

French 255 — *Intermediate French (Reading/Translation)*
German 255 — *Intermediate German (Reading/Translation)*
Rnssian 255 — *Intermediate Russian (Reading/Translation)*
Spanish 255 — *Intermediate Spanish (Reading/Translation)*

Continuation of essential elements of language structure. Emphasis on reading comprehension/translation based on scientific and social science reading materials in contemporary target language. Intensification of grammatical syntactical accuracy in writing. Course is designed to develop a facility for using language studied as a research tool. *Final exam. Prereq: Grade of C or better in For Lang* 253 *or department permission. Sem hrs:* 2½ *fall or* 3 *spring.*

For Lang 365: 1 (1)

French 365 — *Advanced French I*
German 365 — *Advanced German I*
Russian 365 — *Advanced Russian I*
Spanish 365 — *Advanced Spanish I*

Oral discussion of issues in the civilization and culture of the country or countries concerned based on selected readings in the target language. *Final exam. Prereq: Grade of C or better in For Lang* 254 *or For Lang* 255. *Sem hrs:* 2½ *fall or* 3 *spring.*

For Lang 376: 1 (1)

French 376 — *Contemporary French Literature*
German 376 — *Contemporary German Literature*
Spanish 376 — *Contemporary Spanish Literature*

Study of important writers, their works, and influences on their societies. *Final exam. Prereq: For Lang* 365 *or department permission. Sem hrs:* 2½ *fall or* 3 *spring.*

For Lang 491:

French* 491.** ***French AFA Preparation I 1 (1)
Intensive program in French for prospective candidates for the French Air Force Academy Exchange Program. Designed to provide required fluency in advanced conversation and reading/translation (with special emphasis on scientific texts). *Final exam. Prereq: French* 254 *or department permission. Sem hrs:* 3 *spring.*

For Lang 492:

French* 492.** ***French AFA Preparation II 3 (0)
Continuation of French 491. Intensive program stressing everyday conversation and scientific vocabulary. Includes advanced composition, translations and development of note-taking skills in the language. *Final exam. Prereq: French* 491 *and nomination by the Dean of the Faculty for participation in the French Air Force Academy Exchange Program. Sem hrs:* 8 *summer only.*

For Lang 495. *Special Topics* 0-2 (1)
Selected topics in foreign languages. *Final exam or final report. Prereq: Department permission. Sem hrs and offering time determined by department.*

For Lang 499. *Independent Study* 1 (0)
Individual study or research conducted on a tutorial basis. Study may be in any of the six languages offered by the department. Topic or area of study/research must be approved by the department head. *Final exam or term paper. Sem hrs:* 2½ *fall or* 3 *spring.*

Supplementary Information

All cadets who have a background in one of the foreign languages offered at the Academy will be administered a placement examination in that language when they come to the Academy. Based on the results of that examination, a cadet may:

(1) receive validation credit for that language;
(2) be placed in the Accelerated Elementary Course of that language (For Lang 151):
(3) be placed in the Applied Elementary Course sequence (For Lang 121-122);
(4) take the normal Elementary Course sequence (For Lang 101-102).

A cadet who completes an elementary language course sequence and desires to enroll in another elementary language course is required to obtain department approval.

Geography *(Geog)*

Offered by the Department of Economics, Geography and Management

Geog 120. *Introduction to Geography* 1 (1)
Principles of physical and cultural geography applied to social, economic and political patterns. Evaluations of regional associations evolving from the synthesis of man's natural and cultural environment. *Final exam. Sem hrs:* 2½ *fall or* 3 *spring.*

Geog 242. *Analytical Techniqnes in Geography* 1 (1)
Scientific method as applied to geographic inquiry; examines techniques in spatial analysis, locational analysis, cartographic and quantitative methods in geography. Specific problems representative of various subfields of geography are analyzed through application of these techniques. *Final exam. Prereq: Geography major or department permission and Geog* 120. *Sem hrs:* 3 *spring.*

Geog 340. *Cartography* 1 (2)
An introduction to concepts and methods of cartography. Includes history, earth geometry, reference

systems, map projections and grids, map compilation, computer and statistical maps and map reproduction. *Final exam. Prereq: Geog* 120. *Sem hrs:* 2½ *fall.*

Geog 350. *Cultural Geography* 1 (1)

A geographic analysis of cultural factors affecting the nature and distribution of population, settlements, and economic patterns. The processes of cultural change are considered in the development of primitive cultures to industrialized societies. *Final exam. Prereq: Geog* 120. *Sem hrs:* 3 *spring.*

Geog 352. *Systematic Physical Geography I* 1 (1)

An analysis of the parameters governing the distribution, structure and dynamic processes of physical features of the earth. Focuses on regional climatic types, anomalies and meteorological controls, soils and vegetation, hydrologic cycle. *Final exam. Prereq: Geog* 120. *Sem hrs:* 2½ *fall.*

Geog 353. *Systematic Physical Geography II* 1 (2)

An analysis of the parameters governing the distribution, structure, and dynamic processes of the physical features of the earth. Focuses on origin and evolution of landforms, geomorphology, glaciation, geologic structure, rock and mineral identification. Laboratory. *Final exam. Prereq: Geog* 120. *Sem hrs:* 3 *spring.*

Geog 370. *Political Geography* 1 (1)

Analysis of the spatial structure and processes of political systems at the level of the community, within national systems, and among nations. Examines geographic problems and processes of politically organized space including such topics as nationalism, development, and acquisition of natural resources. *Final exam. Prereq: Geog* 120. *Sem hrs:* 3 *spring.*

Geog 372. *Economic Geography* 1 (1)

Location and organization of world's major resources and associated production, distribution, and consumption patterns. Special attention to contemporary industrial and commercial development. Selected case studies on regional development. Field trips required. *Final exam. Prereq: Geog* 120. *Sem hrs:* 2½ *fall.*

Geog 382. *Geographic Application of Imagery Analysis* 1 (1)

Principles and employment of remote sensing systems which obtain imagery in the visible and non-visible portions of the electromagnetic spectrum; rectification of imagery for detailed landform analysis; application of imagery to cultural and physical geographic analysis and cartography. Case studies and class projects focus on direct application of empirical data. *Final exam. Prereq: Geog* 120. *Sem hrs:* 3 *spring.*

Geog 471. *Western Europe and the Mediterranean* 1 (1)

Geographical analysis of the physical and cultural aspects of Western Europe and the Mediterranean. Emphasis on the urban character of Europe and the region's interrelationships with the rest of the world. Discussion of European countries' various political, economic, and cultural ties will be linked to problems and accomplishments of the peoples of Europe. *Final exam. Prereq: Geog* 120. *Sem hrs:* 2½ *fall.*

Geog 472. *USSR and Eastern Europe* 1 (1)

Analysis of the physical, cultural and economic base of each of the Soviet Union's geographic regions followed by topical analysis of cultural and economic phenomena such as population, agriculture, industry and trade for the country as a unit. Minor emphasis on the East European countries to include a geographic survey and interrelationships with the Soviet Union. *Final exam. Prereq: Geog* 120. *Sem hrs:* 3 *spring.*

Geog 473. *The Far East* 1 (1)

Spatial analysis of the physical and cultural landscape of China, Japan and countries of Southeast Asia. Investigates the regional resource base, economic structure and settlement patterns. Special emphasis on the geographical aspects of contemporary social and economic problems of individual countries. *Final exam. Prereq: Geog* 120. *Sem hrs:* 2½ *fall. Last offering: fall* 1975.

Geog 474. *Latin America* 1 (1)

Geographic analysis of the physical, cultural, economic, and political interrelations of the nations of Latin America. Considers the regional distribution of resources, agricultural production, industrial strength, and settlement patterns. Emphasizes the diversity of developmental problems. *Final exam. Prereq: Geog* 120. *Sem hrs:* 3 *spring. Last offering: spring* 1976.

Geog 475. *Geography of the Developing World/East Asia and Latin America* 1 (1)

Geographic analysis of the physical and cultural landscapes of selected regions of the developing world. Investigates the regional distribution of resources, economic structure, industrial strength, and settlement patterns. Focuses on developmental problems with respect to population growth, cultural divergence, social and political instabilities. Department will select specific region for areal focus; emphasis on Latin America in odd numbered years and on Far East in even numbered years. *Final exam. Prereq: Geog* 120. *Sem hrs:* 2½ *fall. First offering: fall* 1976.

Geog 491. *Seminar in the Basis of Geographic Thought* 1 (1)

Examines the development of geographic thought to the present time. Investigates the philosophies of the different schools of geography and analyzes the effects of new theoretical approaches on the current discipline. Field trips required. *Final exam. Prereq: Geog* 350 *or department permission. Sem hrs:* 2½ *fall.*

Geog 495. *Special Topics* 1 (1)

Selected topics in geography. Field trips dependent upon topics. *Final exam or final report. Prereq: Geog*

120, *or department permission. Semester hours and offering time determined by department (not more than* 3 *sem hrs).*

Geog 499. *Independent Study* 1-2 (0)

Independent research and study in a specific area of geography conducted on a tutorial basis. *Term paper. Prereq:* 1/*C standing, and minimum* 3.00 *GPA or department permission. Sem hrs:* 2 *to* 5 *fall or spring.*

History *(History)*

Offered by the Department of History

History 200. *History of the United States* 1 (1)

Survey of United States history from the colonial era to the present. Emphasizes political, social, economic, and cultural developments in a world context. *Final exam. Prereq: Department permission. Sem hrs:* 2½ *fall.*

History 201. *Europe and the World since* 1500 1 (1)

Main trends in world history from 1500 to the present. Emphasizes the emergence of Western Europe to a position of world dominance by the late 19th Century and its subsequent decline. Introduction to predominant characteristics of Latin American, Middle Eastern, African, and Far Eastern civilizations. *Final exam. Sem hrs:* 2½ *fall.*

History 202. *Modern Warfare and Society* 1 (1)

Survey of the complex relationship between warfare and society from the American and French revolutions through the Vietnam war. The role of the military leader, the impact of technology, the evolution of military doctrine, and the development of air warfare are related to the changing character of warfare. *Final exam. Prereq: History* 200 *or* 201 *in preceding semester. Sem hrs:* 3 *spring.*

History 300. *The United States in a Changing World: Critical Issues* 1 (1)

Examines the historical development of critical issues confronting American society today including the role of minorities in American life, the impact of industrialism, expansion of the role of the federal government, the evolution of the city, the quality of life, and America's response to crucial world problems. *Final exam. Prereq: History* 201. *Sem hrs:* 2½ *fall or* 3 *spring.*

History 330. *Historical Methods* 1 (1)

Methods of historical research, analysis, evaluation, and writing. *Term paper. Prereq: History major or department permission. Sem hrs:* 2½ *fall or* 3 *spring.*

History 332. *United States Diplomatic History* 1 (1)

Emphasizes emergence of the United States as a world power and the associated problems. Examination of diplomatic policies and their objectives and the novel factors which have influenced the conduct of diplomacy. *Final exam. Prereq: History* 201. *Sem hrs:* 2½ *fall.*

History 341. *History of Latin America* 1 (1)

The discovery, conquest, and growth of Spanish and Portuguese America. Emphasizes political, social, economic, and cultural institutions since the wars of independence with particular stress on Twentieth Century problems. *Final exam. Prereq: History* 201. *Sem hrs:* 3 *spring.*

History 343. *History of the Far East* 1 (1)

Modern history of East Asia with emphasis on China and Japan. The fundamental cultural developments; implications of contemporary tensions; the political, social, and economic results of Nineteenth and Twentieth Century relationships with Western powers. *Final exam. Prereq: History* 201. *Sem hrs:* 3 *spring.*

History 344. *Origins of Modern Europe* 1 (1)

The political, social, economic, and military history of Europe from the early Middle Ages to the French Revolution. Primary emphasis is on the development of institutions and ideas that determined the course of European history and shaped our own era. *Final exam. Prereq: History* 201. *Sem hrs:* 2½ *fall.*

History 345. *Modern European History* 1 (1)

The political, social, economic, and military history of Europe from the French Revolution to the present. Emphasis is on the following: crucial forces, such as nationalism, socialism, and the Industrial Revolution; the origins and results of the two World Wars: key personalities of the era; the development of contemporary Europe. *Final exam. Prereq: History* 201. *Sem hrs:* 3 *spring.*

History 346. *History of Russia* 1 (1)

Survey of Russian domestic and foreign affairs from the Ninth Century to the present Soviet regime. Emphasis on political, social, economic, and cultural developments since 1801. *Final exam. Prereq: History* 201. *Sem hrs:* 3 *spring.*

History 363. *Unconventional Warfare* 1 (1)

Evolution, theory and practice of insurgent and revolutionary warfare throughout the world with special attention given to Southeast Asia. Unconventional warfare studied in terms of historical perspective, major philosophies involved and actual insurgencies. Examination of counterinsurgency operations in various areas and circumstances. *Final exam. Prereq: History* 202. *Sem hrs:* 3 *spring.*

History 371. *Air Power and Modern Warfare* 1 (1)

History of the air weapon with primary emphasis on leadership and tactics as they evolved during the twentieth century. Covers both the United States and Europe stressing the constant interplay between personalities, institutions, theories, technology, combat experience, and evolving doctrine. *Final exam. Prereq: History* 202. *Sem hrs:* 2½ *fall.*

History 372. *History of the Middle East and Africa* 1 (1)

Survey of the History of the Middle East and Africa with emphasis on ethnic, cultural and religious development and growth of major problems in the modern period. Topics include early empires, impact of Islam, European imperialism and ethnic nationalism. *Final exam. Prereq: History* 201. *Sem hrs:* 3 *spring.*

History 382. *History of Science and Technology* 1 (1)

Historical investigation of the meaning and impact of the scientific revolution, the industrial revolution, and science and technology in the Western world. *Final exam. Prereq: History* 201. *Sem hrs:* 3 *spring.*

History 457. *History of Military Thought* 1 (1)

Historical investigation of the ideas of selected major military thinkers from the time of Machiavelli to the present. Emphasis is on those writers whose impact on evolving strategy and doctrine, whether on land, sea, or in the air, has been most far-reaching. *Final exam. Prereq: History* 202. *Sem hrs:* 2½ *fall.*

History 479. *American Institutions and Ideas* 1 (1)

Historical investigation of the development of American thought, attitudes, and institutions from the colonial period to the present. *Final exam. Prereq: History* 201. *Sem hrs:* 3 *spring.*

History 481. *A History of Minorities* 1 (1)

Course is designed to provide an understanding of how minorities have been treated in the past in the United States. Covers the relationship of the various racial, religious, and ethnic minorities to an evolving American society. The emphasis is on the development of prejudice, the problems of assimilation, and the treatment of Blacks. *Final exam and final report. Prereq: 3/C standing or higher. Sem hrs:* 2½ *fall.*

History 494. *The American Way of War* 1 (1)

Course treats America's wars and warriors from Bunker Hill to Linebacker II. Primary attention is on how Americans have fought their wars. Also considered are why America went to war, the raising of armed forces, and the reactions to the effects of war. Particular emphasis is given to the role of leadership, both civil and military. *Final exam. Prereq: History* 202. *Sem hrs:* 3 *spring.*

History 495. *Special Topics* 1 (1)

Selected topics in history. *Final exam and final report. Prereq: History* 201. *Sem hrs and offering time determined by department (not more than* 3 *sem hrs).*

History 499. *Independent Study* 1 (0)

Reading and research in any recognized area of historical study. Areas selected by instructor depend on student interest. *Term paper. Prereq: History majors must have taken History* 330; *all others department permission. Sem hrs:* 2½ *fall or* 3 *spring.*

Humanities *(Hum)*

Offered by the Department of Foreign Languages

Hum 461. *Russian Literature* 1 (1)

A study of representative Russian authors (such as Pushkin, Turgenev, Dostoevsky, and Tolstoy) who have helped form the cultural heritage and shape the national character of the Russian people. *Final exam. Sem hrs:* 2½ *fall.*

Hum 463. *Far Eastern Literature* 1 (1)

A historical survey and analysis of major literary works of the Far East with emphasis on China and Japan. *Final exam. Sem hrs:* 2½ *fall.*

Hum 499. *Foreign Exchange Study* 5 (0)

One semester enrollment as a full-time student at an Allied Air Force Academy. In addition to formal

study, the course will include visits to military installations and historical and cultural areas of the host country. *Term paper and report. Prereq: Dean of Faculty permission. Sem hrs:* 12½ *fall or* 15 *spring.*

Instructional Technology *(Inst Tch)*

Offered by the Directorate of Instructional Technology

Inst Tech 101. *Academic Skills* 0 (1)

Organization of study time, note taking, study methods, preparing for examinations, and listening skills. Accelerated reading skills to include rate and comprehension, surveying, and planning purpose. *Final exam. Sem hrs: none fall.*

Inst Tech 102. *Basic Typing* 0 (0)

Basic typing limited to skills needed for theme, report, and military/personal correspondence typing. *No final. Sem hrs: none fall.*

Law *(Law)*

Offered by the Department of Law

Law 210. *An Introduction to Law* 1 (1)

An introduction to the substance and administration of law, including the judicial process and legal reasoning. Examines how stability is maintained, disputes are resolved and freedom protected through law, by studying the principles of contracts, property, torts, and, in the spring semester, First Amendment rights. *Final exam. Prereq:* 3/*C or* 2/*C standing; concurrent enrollment in Philos* 210 *(for scheduling). Must be completed prior to a cadet's sixth semester. Sem hrs:* 1½ *fall or* 2 *spring.*

Law 400. *Law for Commanders* 1 (1)

A survey of the principles of public and private law which an officer may encounter in his official and personal capacities, including crimes, evidence, military justice, administrative law, persons, law of air space, laws of war, personal estate planning and, in the spring semester, First Amendment rights. *Final exam. Prereq:* 1/*C standing; cadets enrolled in the fall semester must have completed Law* 210 *in a spring semester, and cadets enrolled in the spring semester must have completed Law* 210 *in a fall semester. Sem hrs:* 2½ *fall or* 3 *spring.*

Law 451. *American Constitutional Law* 1 (1)

An inquiry into legal problems which arise when constitutionally divided power is allocated to separate elements of government. Special attention is given to the judicial branch as arbiter in determining the limits on national and state power, in protecting the individual against governmental activity which offends the Bill of Rights and other constitutional guarantees, and in securing civil rights. *Final exam. Prereq: Law* 210; *Pol Sci* 211. *Sem hrs:* 3 *spring.*

Law 461. *International Law* 1 (1)

The role of public international law in the decision-making processes of sovereign nations. Topics include international agreements, the role of the United Nations and other international organizations, nationality, jurisdiction, rights and duties on the seas, continental shelf, air and space, sanctions and force short of war, civil war and intervention, war crimes, peacekeeping. *Final exam. Prereq:* 1/*C or* 2/*C standing. Sem hrs:* 2½ *fall.*

Law 462. *Government Contract Law* 1 (1)

Comprehensive study of government contract law with emphasis given to basic legal principles, procurement policy, methods of procurement, types of contracts, contract clauses, taxation, regulation, social and economic provisions, disputes procedures, default remedies and terminations. *Final exam. Prereq: Law* 210; 1/*C or* 2/*C standing. Sem hrs:* 3 *spring.*

Law 495. *Special Topics* 1 (1)

Selected topics in law. A seminar in the legal implications of contemporary social, economic and political problems and the ability of the American legal system to solve those problems. *Final report. Prereq:* 1/*C standing and department permission. Limited enrollment. Sem hrs and offering time determined by department (not more than* 3 *semester hours).*

Life Science *(Life Sci)*

Offered by the Department of Life and Behavioral Sciences

Life Sci 210. *Aerospace Physiology* 1 (2)

Classroom and laboratory studies in the basic physiologic function of man's body systems. Emphasis is on responses of the human organism as it reacts to stresses of various environments including space, pollution, nutrition, fatigue, subsonic or supersonic flight and certain other aerodynamic stresses that alter normal physiology. Physiologic training is provided to

prepare cadets for hypobaric chamber flights. One field trip to Lowry AFB. *Final exam. Sem hrs:* 2½ *fall or* 3 *spring.*

Life Sci 263. *Introduction to Life Sciences* 1 (2)

Didactic and practical laboratory studies of the problems of life sciences. Prepares the student for advanced studies in this field. Emphasis placed on structure, physiology, natural history, and evolution of living organisms. *Final exam. Prereq: Life Sci* 210. *Sem hrs:* 3 *fall or* 3½ *spring. Last offering: fall* 1975.

Life Sci 280. *The Fundamentals of Ecology* 1 (1)

Ecology, its scope and relation to other sciences. Studies include species and population interactions, ecosystems, tropic structure within ecosystems, biomes, and environmental threats to man. *Final exam. Prereq: Life Sci* 210. *Sem hrs:* 2½ *fall or* 3 *spring. Last offering: spring* 1976.

Life Sci 330. *Biological Science I* 1 (2)

An introduction to the basic concepts and vocabulary of modern biology. Special emphasis on fundamentals of cellular anatomy, bio-energetics, genetics and reproduction. Demonstrations and student participation laboratories. *Final exam. Prereq: Life Sci* 210. *Sem hrs:* 3 *fall or* 3½ *spring. First offering: spring* 1976.

Life Sci 331. *Biological Science II* 1 (2)

Continued introduction to fundamentals of biology with emphasis in biosystematics, ecology, comparative physiology, botany and parasitic diseases pertaining to the global preparedness of an Air Force officer. Demonstration and student participation laboratories. *Final exam. Prereq: Life Sci* 330. *Sem hrs:* 3 *fall or* 3½ *spring. First offering: fall* 1976.

Life Sci 333. *Environmental Physiology* 1 (1)

The problems of physiological adaptation by man and other living organisms to natural environmental stresses and artificial (space) environments. *Final report. Prereq: Life Sci* 210. *Sem hrs:* 2½ *fall or* 3 *spring. Last offering: fall* 1976.

Life Sci 363. *Genetics* 1 (1)

Study of the laws of inheritance and their application to man. Interrelationships of hereditary and environmental effects on man's growth and development. *Final exam. Prereq: Life Sci* 210. *Sem hrs:* 2½ *fall or* 3 *spring.*

Life Sci 373. *Bio-Organic Molecular Processes I* 1 (1)

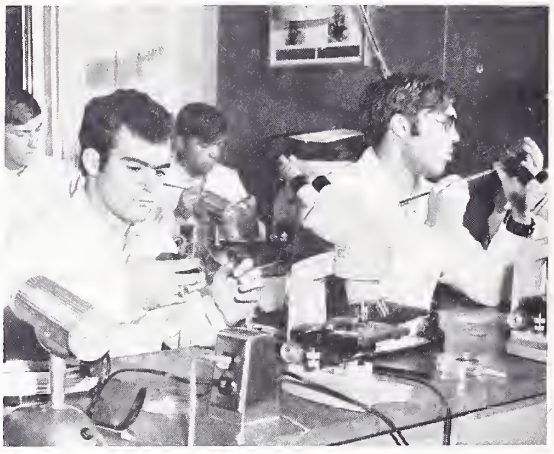
A study of carbon-containing compounds with emphasis on structure, nomenclature, physical and chemical properties, synthetic schemes and reaction mechanisms. Simple hydrocarbons and oxygen and nitrogen-containing compounds are considered in depth as the basic units of complex biological molecules. *Final exam. Prereq: Chem* 102, 122, *or* 151; *or department permission. Sem hrs:* 3 *fall. Last offering: fall* 1975.

Life Sci 374. *Bio-Organic Molecular Processes II* 1 (1)

Continuation of Life Sci 373. Includes a study of amino acids, peptides, proteins, enzymes, nucleic acids, carbohydrates and lipids. General metabolism, enzymology, bioenergetics, water and acid-base balance, and blood and urine composition in health and disease are also considered. *Final exam. Prereq: Life Sci* 373; *department permission. Sem hrs:* 3½ *spring. Last offering: spring* 1976.

Life Sci 375. *Laboratory Techniques in Molecular Processes I* 1 (2)

Experiments emphasizing chemical and instrumental techniques for studying simple organic molecules. Procedures include chemical qualitative analysis, refractometry, crystallization, melting point determina-



tions, chromatography and spectroscopy. Reaction types studied include displacement, elimination, addition, oxidation and reduction. Taken concurrently with Life Sci 373. *No final. Prereq: Chem* 102, 122, *or* 151; *department permission. Sem hrs:* 2 *fall. Last offering: fall* 1975.

Life Sci 376. *Laboratory Techniques in Molecular Processes II* 1 (2)

Experiments dealing with the isolation, properties, and functions of amino acids, proteins, enzymes, nucleic acids, carbohydrates and lipids. Techniques include wet chemical procedures, titrimetry, electrophoresis, venipuncture, blood, urine, and gastric analyses. Taken concurrently with Life Sci 374. *No final. Prereq: Life Sci* 375. *Sem hrs:* 2½ *spring. Last offering: spring* 1976.

Life Sci 380. *Bioenvironmental Science I* 1 (1)

Fundamental ecological interrelationships between organisms and their environments, including population interactions, energy and nutrient cycles, space and time utilization. Emphasis on how man's activities (agriculture, forestry, wildlife management, urban

development, mineral and energy extraction, air and water pollution) affect major biomes such as deserts, prairies, forests, lakes and oceans. Discusses environmental threats due to man's impact on nature. *Final exam. Prereq: Life Sci* 210. *Sem hrs:* 2½ *fall or* 3 *spring. First offering: fall* 1976.

Life Sci 381. *Bioenvironmental Science II* 1 (1)

Study of anatomical and physiological mechanisms of homeostasis by which man and other animals are able to exist under a wide range of natural and artificial environmental stresses. Discusses the effect of environmental stresses on man's ability to perform in a wide range of situations (office, manned flight, desert survival). Studies include why and how man maintains an artificial environment (clothing, cities, spacecraft) and the impact of the resulting man made environmental stresses (air pollution, water pollution, population crowding, etc.) on the basic physiological functions and thus health. *Final exam. Prereq: Life Sci* 380 *or department permission. Sem hrs:* 2½ *fall or* 3 *spring. First offering: spring* 1977.

Life Sci 383. *Human Anatomy* 1 (2)

Lecture and laboratory studies of detailed human anatomy with special emphasis on the following organ systems: skeletal, muscular, circulatory, digestive, respiratory, excretory, reproductive, endocrine, and nervous. *Final exam. Prereq: Life Sci* 331 *or department permission. Sem hrs:* 3 *fall or* 3½ *spring. First offering: spring* 1977.

Life Sci 420. *Biokinetics* 1 (1)

In depth lecture and seminar studies of the human organism in motion in terms of anatomic, physiologic, and mechanical principles with special emphasis given to the effects of movement upon the structure and function of the human body. The bio-mechanic aspects of force, leverage, and impetus are explored in a variety of neuromuscular skills. *Final exam. Prereq: Life Sci* 383. *Sem hrs:* 2½ *fall or* 3 *spring. First offering: fall* 1977.

Life Sci 431. *Microbiology I* 1 (2)

Lecture and laboratory studies of bacteria, viruses and fungi common to our environment. Systematic identification and physiology of microbial species are emphasized. *Final exam. Prereq: Life Sci* 263; *department permission. Sem hrs:* 3 *fall.*

Life Sci 432. *Microbiology II* 1 (2)

Lecture and practical laboratory studies of tissues with special emphasis on system and organ identification by staining techniques and microscopic identification. *Final exam. Prereq: Life Sci* 431 *or department permission. Sem hrs:* 3½ *spring. Last offering:* spring 1977.

Life Sci 442. *Medical Physiology* 1 (1)

In depth lecture and seminar studies of the physiology of human organ systems with special emphasis in the normal and pathologic physiology of endocrinology, cardiology, circulation, respiration, and gastrointestinal systems as they relate to aerospace medicine. *Final exam. Prereq: Life Sci* 263; *department permission. Sem hrs:* 2½ *fall or* 3 *spring. Last offering: spring* 1977.

Life Sci 444. *Radiation Biology and Biotechnology* 1 (1)

Lecture and laboratory studies of the interaction of electromagnetic and particulate radiation with living systems; special emphasis is placed on energy absorption, detection and control. The application of electromagnetic radiation, lasers, the Doppler effect, ultrasound, and electron microscopy are presented with reference to problems of interest to the Air Force. *Final report. Prereq: Life Sci major or department permission. Sem hrs:* 3 *fall or* 3½ *spring.*

Life Sci 447. *Advanced Physiology I* 1 (2)

Lecture and laboratory study of human physiology. Areas to be covered will include homeostasis, acclimatization to multiple stresses, nervous and endocrine control, special senses and digestion. The system concept will be used. *Final exam. Prereq: Life Sci* 383 *or department permission. Sem hrs:* 3 *fall. First offering: fall* 1977.

Life Sci 448. *Advanced Physiology II* 1 (2)

Lecture and laboratory study of human physiology, particularly the Air Force environment. The systems approach will be used to cover cardiovascular, respiratory, water and electrolyte balance, musculoskeletal and reproductive systems. Emphasis will be on the whole individual. *Final exam. Prereq: Life Sci* 447. *Sem hrs:* 3½ *spring. First offering: spring* 1978.

Life Sci 460. *Molecular Biology* 1 (1)

A study of the macro and ultrastructure of the cell as it relates to function. Particular attention placed on control mechanisms, endocrinology, immunology and homeostasis at the molecular level. *Final exam. Prereq: Life Sci* 374. *Sem hrs:* 2½ *fall or* 3 *spring.*

Life Sci 461. *Developmental Anatomy I* 2 (3)

Classroom and laboratory study of embryonic development of various vertebrate animals. Detailed study of the fate and function of germ cell layers. *Final exam. Prereq: 1/C standing; Life Sci* 263; *department permission. Sem hrs:* 5 *fall. Last offering: fall* 1976.

Life Sci 462. *Developmental Anatomy II* 1 (2)

Classroom and laboratory study of the comparative anatomy of vertebrate animals. Elements of classification and similarities of function. *Final exam. Prereq: 1/C standing; Life Sci* 461; *department permission. Sem hrs:* 4 *spring. Last offering: spring* 1977.

Life Sci 465. *Functional Anatomy I* 1 (2)

Lecture and laboratory studies of detailed human anatomy including basic histology of various tissues of the mammal, embryological origins of tissue layers, and advanced physiology of selected topics. *Final exam. Prereq: Life Sci* 263. *Sem hrs:* 3 *fall. Last offering: fall* 1976.

Life Sci 466. *Functional Anatomy II* 1 (2)

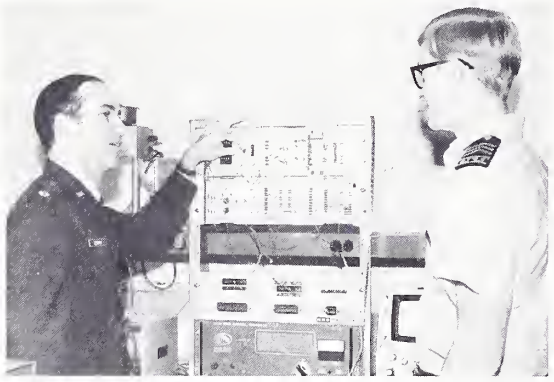
In-depth lecture and laboratory studies of the physiology of organ systems with special emphasis on endocrinology, cardiovascular, respiratory and gastrointestinal physiology. *Final exam. Prereq: Life Sci* 465. *Sem hrs:* 3½ *spring. Last offering: spring* 1977.

Life Sci 495. *Special Topics* 1 (1)

Selected topics in life sciences. *Final exam or final report. Prereq: Department permission. Sem hrs and offering time determined by department (not more than* 3 *sem hrs).*

Life Sci 499. *Independent Study* 1-2 (0)

Individual research in life sciences or behavioral sciences under the direction of a faculty member. Emphasizes use of laboratory facilities. *No final. Prereq: Life Sci* 263; *department permission. Sem hrs:* 2 *to* 5 *fall or spring.*



Management *(Mgt)*

Offered by the Department of Economics, Geography and Management

Mgt 330. *Financial Accounting* 1 (1)

Fundamental accounting concepts and techniques necessary for administration of an organization. Includes analysis of transactions, classifications and recording of data, amortization of assets, treatment of taxes, and other elements of an accounting system for the measurement of operating results and financial condition. *Final exam. Sem hrs:* 2½ *fall or* 3 *spring.*

Mgt 331. *Statistical Decision Methods* 1 (1)

Analysis of data, introduction to probability theory, probability distributions, statistical inference, hypothesis testing, sample survey methods, index numbers, and decision making under uncertainty with emphasis on cost applications. *Final exam. Sem hrs:* 2½ *fall.*

Mgt 332. *Managerial Accounting* 1 (1)

Internal accounting controls and reports, control of decentralized operations, basic cost accounting, flow of funds analysis, budgeting, introduction to cost accounting, and use of quantitative techniques to aid decision making. Course concludes with a competitive game that provides an opportunity to apply managerial accounting in a simulated business situation. *No final. Prereq: Mgt* 330. *Sem hrs:* 3 *spring.*

Mgt 336. *Introduction to Management and Organizations* 1 (1)

Theories of management and organization are developed and compared with emphasis on different management functions and organizational forms. Specific management functions covered are planning, organizing, directing, communicating, controlling and coordinating. The key features of the bureaucratic form of organization are considered and contrasted with alternative organizational structures. Case studies are employed where appropriate to illustrate and synthesize the major concepts developed in the course. *Final exam. Prereq: Beh Sci* 302 *and Mgt* 339. *Sem hrs:* 2½ *fall or* 3 *spring.*

Mgt 339. *Introduction to Management Science* 1 (1)

Management of production systems in areas of business and defense. Major areas of study are the design, operation and control of production/operations management systems. Some of the management techniques discussed are the systems concept, PERT, CPM, and statistical quality control. *Final exam. Sem hrs:* 2½ *fall or* 3 *spring.*

Mgt 360. *Quantitative Decision Methods* 1 (1)

Model building, multiple regression analysis and decision theory with special emphasis on applications to defense management decisions. *Final exam. Prereq: Mgt* 331. *Sem hrs:* 3 *spring.*

Mgt 361. *Personnel Management and Industrial Relations* 1 (1)

Surveys the field of personnel management by analyzing the major tasks of procuring, developing, maintaining and utilizing the human resources of an organization. Includes an introduction to industrial relations in the United States, with emphasis on the collective bargaining process. Examines the development of employee management relations in the Federal Civil Service, with special consideration given to the increasingly important role of the junior military manager. *Final exam. Sem hrs:* 2½ *fall or* 3 *spring.*

Mgt 437. *Managerial Finance* 1 (1)

Techniques of financial decision-making with emphasis on the internal operation of organizations relating to asset acquisition and funds management. Basic concepts and tools for financial analysis are stressed in the first half of the course. The second half centers on a financial management simulation exercise, emphasizing how the analytical tools are used in organizations. Case studies are combined with military problems to identify special problems in non-profit oriented organizations. *Final exam. Prereq: Mgt* 330. *Sem hrs:* 2½ *fall.*

Mgt 460. *Operations Analysis I* 1 (1)

Methods of operations analysis including inventory models, linear programming, queueing theory, replacement models, and reliability. *Final exam. Prereq: Mgt* 360 *or Math* 357. *Sem hrs:* 2½ *fall or* 3 *spring.*

Mgt 462. *Operations Analysis II* 1 (1)

Investigates systems analysis efforts as complete works. Designed as an integrative course for the application of quantitative methods to current Air Force problems. Relevant Air Force and OSD systems analysis studies and methods are examined. *Term project. Prereq: Mgt* 460 *or department permission. Sem hrs:* 3 *spring.*

Mgt 470. *Seminar in Organization Theory* 1 (2)

A seminar on current concepts of how organizations act and react with respect to their technical and social environments. Managerial processes, measuring organizational performance and achievement, aspects of influencing and controlling organization participants, contingency theories of management, and current issues in military management will be studied and discussed using case studies and current readings. Getting people to work together, communicate and execute decisions in the Air Force environment will be the focus of the term project. *Term project or final exam. Sem hrs:* 3 *spring.*

Mgt 472. *Defense Managerial Applications* 1 (2)

Stresses problem identification, strategic planning, decision theory, policy formulation and general management issues through the use of defense related cases and critical incidents. Current developments in management will be reviewed and applied to a variety of defense management problems. Actual involvement with current Air Force problems will be emphasized. *Final exam. Prereq: 1/C Standing. Sem hrs:* 3 *spring.*

Mgt 475. *Distribution Management* 1 (1)

The concepts, tools, and techniques of distribution management are discussed. Markets, life-cycle, product development, procurement, total cost concepts, product and service promotion, and strategic planning are the topics presented. Case studies, guest lecturers, and class projects emphasize Air Force applications of distribution management techniques such as recruiting for the all-volunteer force, selling to the military, promoting ideas, and parts inventory management. *Final exam. Sem hrs:* 2½ *fall.*

Mgt 482. *Investment Analysis* 1 (1)

An introduction to investments and investment analysis. Securities markets, media of investments and associated analysis is covered. Marketable securities such as stocks, bonds, and mutual funds are emphasized. Investments in land, life insurance and other media are surveyed. A computerized stock market game is used to provide experience at investment decision making. *Final exam. Prereq: Econ* 212. *Sem hrs:* 2½ *fall or* 3 *spring.*

Mgt 485. *Management of Systems Development and Acquisition* 1 (1)

Discussion of management problems inherent in development and acquisition of large, complex systems and the buyer-seller relationships of government agencies and their industrial contractors. Major areas of study include: the requirements process, defense contracting procedures, management and control of large programs and marketing characteristics of the defense industry. Case studies of recent weapon systems programs plus a program management simulation exercise of a new weapon system are used to provide the setting for class discussions. *Final exam. Sem hrs:* 3 *spring.*

Mgt 495. *Special Topics* 1 (1)

Selected topics in management. *Final exam or final report. Prereq: Department permission. Sem hrs and offering time determined by department (not more than* 3 *sem hrs).*

Mgt 499. *Independent Study* 1-2 (0)

Tutorial investigation of a specific area of management. *No final. Sem hrs:* 2 *to* 5 *fall or spring.*

Mathematics *(Math)*

Offered by the Department of Mathematical Sciences

Math 103. *Pre-Calculus Mathematics* 1 (2)

College algebra and trigonometry. *Final exam. Prereq: Department recommendation. Sem hrs:* 2½ *fall.*

Math 121. *Calculus I* 1 (2)

Functions; plane analytic geometry; limits, including limits at infinity and infinite limits, theorems on differentiation; differentiation of algebraic functions; differential calculus. *Final exam. Sem hrs:* 2½ *fall* or 3 *spring.*

Math 122. *Calculus II* 1 (2)

Applications of derivatives to include graphing, min-max and related rates; properties of integrals; applications of the integral to include area, work and fluid pressure. *Final exam. Prereq: Math* 121. *Sem hrs:* 2½ *fall or* 3 *spring.*

Math 123. *Calculus III* 1 (2)

Differentiation and integration of trig, log and exponential functions; integration techniques; applications of integration to include volumes and surface area of solids of revolution, iterated and improper integrals. *Final exam. Prereq: Math* 122. *Sem hrs:* 2½ *fall or* 3 *spring.*

Math 124. *Calculus IV* 1 (1) or 1 (2)

Real vectors; the position vector; motion of a particle; velocity and acceleration vectors; polar, spherical and cylindrical coordinate systems; directional derivative and gradient; geometric considerations

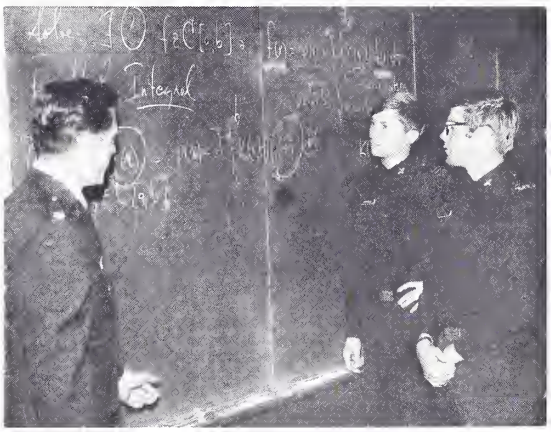
using the partial derivative; applications of partial differentiation; matrix algebra. *Final exam. Prereq: Math* 123. *Sem hrs:* 2½ *fall or* 3 *spring.*

Math 221. *Applied Mathematics I* 1 (1)

Introduction to differential equations with applications. Introduction to linear operators with emphasis upon their application to differential equations. Introduction to the theory of approximations with emphasis upon Taylor Polynominal approximations to solutions of differential equations. Introduction to numerical methods for solving differential equations. *Final exam. Prereq: Math* 123. *Sem hrs:* 2½ *fall* or 3 *spring.*

Math 222. *Applied Mathematics II* 1 (1)

Introduction to probability including discrete and continuous random variables, expected values, moments, and applications, including statistics; applications of all mathematics covered in the core sequence with emphasis on mathematical modeling. *Final exam. Prereq: Math* 124 *and* 221. *Sem hrs:* 2½ *fall or* 3 *spring.*



Math 330. *Applied Engineering Mathematics* 1 (1)

Matrix algebra and systems of linear equations; vector calculus, gradient, divergence, curl; Divergence Theorem; Stokes' Theorem; tensor definitions and notation; complex variable operations, complex analytic functions, conformal mapping. *Final exam. Prereq: Math* 124. *Sem hrs:* 2½ *fall or* 3 *spring.*

Math 341. *Introductory Numerical Analysis* 1 (1)

Numerical solutions of non-linear equations; numerical methods in linear algebra; theory of polynomial approximations; interpolation theory; error analysis; numerical integration and numerical solution of differential equations; computer programming laboratory exercises. *Final exam. Prereq: Completion of the core math sequence and Comp Sci* 200. *Sem hrs:* 2½ *fall or* 3 *spring.*

Math 342. *Numerical Analysis with Applications* 1 (1)

Small digital computer programming with computer graphics applications. Applications of Fourier Approximation techniques. Numerical techniques for statistical least-squares approximations. Solution of systems of nonlinear equations. Numerical methods for solution of partial differential equations. Fortran programming exercises and a term project applying methods from one or more of the general topics. *Final exam. Prereq: Math* 341. *Sem hrs:* 3 *spring.*

Math 351. *Applied Differential Equations* 1 (1)

First order differential equations; second order linear differential equations; numerical techniques; power series solutions; partial differential equations. *Final exam. Prereq: Math* 221. *Sem hrs:* 2½ *fall or* 3 spring.

Math 357. *Probability* 1 (1)

Essentials of modern probability and random variables; discrete and continuous random variables and their distributions; characterizations of random variables; derived distributions; sampling distributions; the central limit theorem and the law of large numbers. *Final exam. Prereq: Completion of the core math sequence. Sem hrs:* 2½ *fall.*

Math 358. *Statistics* 1 (1)

Common techniques of statistical inference; probability distributions used in statistics; hypothesis testing, emphasizing both Type I and Type II errors, and including experimental design considerations; point and confidence interval estimation; curve fitting and regression analysis. *Final exam. Prereq: Math* 357. *Sem hrs:* 3 *spring.*

Math 360. *Linear Algebra* 1 (1)

Matrix algebra and systems of linear equations; determinants; vector spaces including function spaces and inner product spaces; linear transformations including rotations, matrix of a linear transformation, change of basis and transition matrices; eigenvalues, eigenvectors, and quadratic forms; computation with and properties of special matrices. *Final exam. Prereq: Math* 221. *Sem hrs:* 2½ *fall or* 3 *spring.*

Math 365. *Modern Algebra* 1 (1)

Study of algebraic structures and functions between these structures. Topics include: cyclic groups; permutation groups; normal subgroups and quotient groups; quotient rings and ideals; polynomial rings; finite field extensions. Applications to number theory, geometry, and coding theory. *Final exam. Prereq: Completion of the core math sequence. Sem hrs:* 3 *spring.*

Math 366. *Advanced Calculus I* 1 (1)

Theoretical study of concepts of calculus for functions of one variable. *Final exam. Prereq: Math* 221. *Sem hrs:* 2½ *fall.*

Math 367. *Advanced Calculus II* 1 (1)

Theoretical study of concepts in analysis with emphasis on R^n. Real numbers; topology of R^n; sequences in R^n; sequences of functions R^n to R^m; local and global properties of continuous functions R^n to R^m; the derivative in R; Riemann-Stieltjes integral. *Final exam. Prereq: Math* 360 *and* 366. *Sem hrs:* 2½ *fall.*

Math 368. *Intermediate Differential Equations* 1 (1)

Selected topics to include: properties of linear spaces; existence and uniqueness via the theory of fixed points; oscillation and disconjugacy; stability theory and Lyapunov functions. *Final exam. Prereq: Math* 366 *or department permission. Sem hrs:* 3 *spring.*

Math 371. *Introduction to Operations Research* 1 (1)

An introductory course in the mathematical techniques of operations research emphasizing applications. Topics include mathematical programming, dynamic programming, game theory, queueing theory, inventory models, Markov chains, network techniques, search techniques, and simulation. *Final exam. Prereq: Completion of the math core sequence. Sem hrs:* 2½ *fall.*

Math 376. *Introduction to Point-Set Topology* 1 (1)

Sets, functions, limit points, closure, subspaces, continuity, connectedness, compactness, metric spaces; applications to the real line and Euclidean n-space. *Final exam. Prereq: Math* 366 *or department permission. Sem hrs:* 3 *spring.*

Math 441. *Linear Programming* 1 (1)

Review of matrix algebra, convex sets and linear inequalities; simplex algorithm, duality theory; network flow; integer programming. *Final exam. Prereq: Math* 360. *Sem hrs:* 3 *spring.*

Math 442. *Decision Theory and Game Theory* 1 (1)

Fundamentals and applications of decision theory to include Bayesian statistics, subjective probability and utility theory. Introduction to game theory. *Final exam. Prereq: Completion of the core math sequence. Sem hrs:* 2½ *fall.*

Math 451. *Complex Variables* 1 (1)

Analytic functions; mapping; integrals; power series; residues and poles; applications. *Final exam. Prereq: Math* 221. *Sem hrs:* 3 *spring.*

Math 455. *Advanced Engineering Mathematics* 1 (1)

Applied partial differential equations; solutions of boundary value problems. Methods of solution include eigenfunction expansion, Green's functions, and integral transform. *Final exam. Prereq: Math* 351 *or* 368. *Sem hrs:* 2½ *fall or* 3 *spring.*

Math 495. *Special Topics* 1 (1)

Selected advanced topics in mathematics. Fall 1975 offering: to be announced. Spring 1976 offering: Topics in Operations Research. *Final exam. Prereq: Department permission. Sem hrs:* 2½ *fall or* 3 *spring.*

Math 499. *Independent Study and Research* 1 (0)

Individual study and/or research under the direction of a faculty member. *Oral midterm and final; term paper. Prereq: Department permission. Sem hrs:* 1 *to* 6 *fall or spring.*

Mechanics *(Mech)*

Offered by the Department of Civil Engineering, Engineering Mechanics and Materials

Mech 120. *Engineering Fundamentals* 1 (2)

Introduction to the basic principles of engineering. Includes fundamentals of problem analysis and application of physical laws to the solution of basic problems encountered in the engineering sciences. Creative problems of introductory design and analysis included in the spring semester. *Final exam. Final design problem in spring. Prereq: Completed or enrolled in* Math 122. *Sem hrs:* 2½ *fall or* 3 *spring.*

Mech 350. *Experimental Stress Analysis* 1 (2)

Introduction to techniques of experimental stress analysis. Includes the theory and application of strain gages, photoelasticity, and holography. Approximately one-third of the class periods are spent in the lab gaining experience in the use of the latest lab equipment. Included is a special project for which each cadet, or group of cadets, designs, builds, and tests some type of transducer. *No final exam. Prereq: Mech* 362. *Sem hrs:* 3 *fall or spring.*

Mech 355. *Materials Science I* 1 (1)

Analysis of engineering materials and their application in the design of aerospace systems. Fundamentals of crystalline arrangements and imperfections, nonmetallic materials, and composites; phase relationships in one and multicomponent systems, diffusion, strengthening mechanisms, corrosion and environmental effects; commercial developments for structures, propulsion and reentry. *Final exam. Prereq: Mech* 362. *Sem hrs:* 2½ *fall or* 3 *spring.*

Mech 356. *Materials Science II* 1 (2)

A study of the physical metallurgy and properties of materials. Basic principles of diffusion processes, solidification, and phase diagrams; transformations of phases, thermal-mechanical treatment of commercial alloys, and the effects of microstructure. Lab. *Final exam. Prereq: Mech* 355. *Sem hrs:* 3 *spring.*

Mech 361. *Vector Engineering Mechanics* 1 (2)

Statics including resultants, equilibrium, and friction. Kinematics including absolute and relative motion.

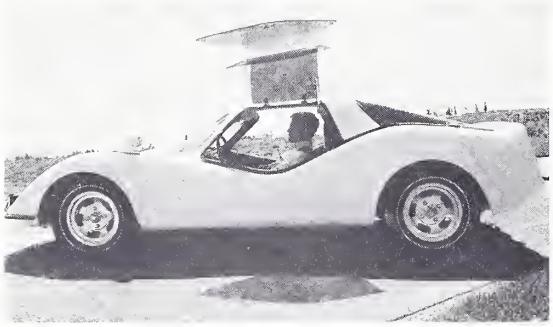
Kinetics including force-mass-acceleration, work-energy, and impulse-momentum. Vector methods of solution are emphasized where applicable. Lab. *Final exam. Prereq: Mech* 120; *Math* 124, *or department permission. Sem hrs:* 3 *fall or spring.*

Mech 362. *Mechanics of Materials* 1 (2)

The stresses and deflections developed in materials as a result of centric, torsional, flexural, and combined loadings; including statically indeterminate structural members and columns. Includes an introduction to the basic mechanical properties of materials with discussions of strengthening mechanisms, fracture, creep, fatigue, and corrosion. Lab. *Final exam. Prereq: Mech* 120. *Sem hrs:* 3 *fall or spring.*

Mech 373. *Introduction to Aerospace Structures* 1 (1)

Loads, torsion, unsymmetrical bending, bending shear, energy techniques, and combined loading applied to aerospace structures. General stress analysis and an introduction to some practical aspects such as aircraft structural repair. *Final exam. Prereq: Mech* 362. *Sem hrs:* 2½ *fall.*



Mech 395. *Automotive Systems Analysis* 1 (2)

An analysis of system engineering with special emphasis on the application of engineering principles to automotive components and their integration into a complete system. The purpose is to provide a better appreciation of the application of theoretical analysis in the creation, design, maintenance, troubleshooting and repair of complicated engineering systems. Topics covered include vehicle dynamics, suspension system, power plant, drive train, electrical-mechanical system, steering and braking systems, types of tires, design, selection of materials, safety devices and the integration of these into a workable unit. *Final report. Prereq: 1/C or 2/C standing; Mech* 361. *(Course enrollment will be limited; cadets desiring to take this course must contact the department for approval prior to registration.) Sem hrs:* 2½ *fall or* 3 *spring.*

Mech 424. *Advanced Strength of Materials* 1 (1)

Analysis of stress and strain with emphasis on the relationship between stress, strain, and deformation in structural elements. Includes the theories of failure, bending of unsymmetrical cross sections, torsion of shafts of arbitrary cross section and thin-walled closed and open sections. *Final exam. Prereq: Mech* 362. *Sem hrs:* 2½ *fall or* 3 *spring.*

Mech 453. *Aerospace Structures* 1 (1)

Energy methods of structural analysis; principle of stationary potential energy applied to the anaylsis of trusses and frames. Energy methods for the determination of structural element stiffness characteristics. Matrix structural analysis using the direct stiffness approach for the solution of structures composed of many elements. *Final exam. Prereq: Mech* 362. *Sem hrs:* 2½ *fall.*

Mech 454. *Intermediate Dynamics* 1 (1)

Study of three-dimensional kinematics, dynamics of particles and systems of particles. Lagrangian dynamics and dynamics of rigid bodies. *Final exam. Prereq: Mech* 361; *Math* 351. *Sem hrs:* 2½ *fall.*

Mech 455. *Electronic Processes in Materials* 1 (1)

Development of general electronic models of solid materials. Electrical properties of conductors, insulators and semi-conductors, optical and magnetic processes, materials and applications in solid state devices. Introduction to crystal systems, x-ray theory, and analysis methods. Principles of electrochemical corrosion. *Final exam. Prereq: Physics* 212. *Sem hrs:* 2½ *fall.*

Mech 456. *Mechanical Metallurgy* 1 (1)

Behavior of materials under simple and combined stress systems. Elementary dislocation theory, principles of plastic deformation, strengthening mechanisms, brittle fracture, fatigue; failure theories. Fundamentals of fracture mechanics and behavior of composite materials; analysis of materials failure and design influences. *Final exam. Prereq: Mech* 355, *or department permission. Sem hrs:* 2½ *fall.*

Mech 459. *Advanced Aerospace Materials* 1 (1)

Advanced and theoretical topics in the development of high temperature materials for aerospace systems. An examination of the fundamental principles of metallurgical thermodynamics. Analysis of ideal and non-ideal liquid and solid alloys, heterogeneous equilibria, phase diagrams, gas-metal reactions, and corrosion principles; oxidation-resistant and high-temperature materials. Problems in materials application at high temperature. *Final exam. Prereq: Mech* 355. *Sem hrs:* 3 *spring.*

Mech 464. *Engineering Design* 1 (2)

Application and integration of engineering principles in the creative design processes. Includes analysis and design of systems, study of design process, basic manufacturing techniques, background engineering topics, qualitative and quantitative engineering design activity, and component and systems engineering design. *Final report. Prereq: Mech* 361 *and* 355. *Sem hrs:* 4 *fall or spring.*

Mech 472. *Intermediate Vibrations* 1 (1)

Free and forced linear vibrations of single and multi degree-of-freedom systems. Exact and approximate analyses of linear vibrations of continuous bodies. *Final exam. Prereq: Math* 351; *Mech* 361 *or Physics* 355. *Sem hrs:* 3 *spring.*

Mech 480. *Advanced Topics in Mechanics or Materials Engineering* 1-2 (1)

Selected topics in engineering mechanics or materials engineering. Fall 1975 and spring 1976 offering: Materials in Engineering Design. *Final exam. Prereq: Department permission. Sem hrs:* 2½ *fall or* 3 *spring.*

Mech 482. *Advanced Aerospace Structures* 1 (1)

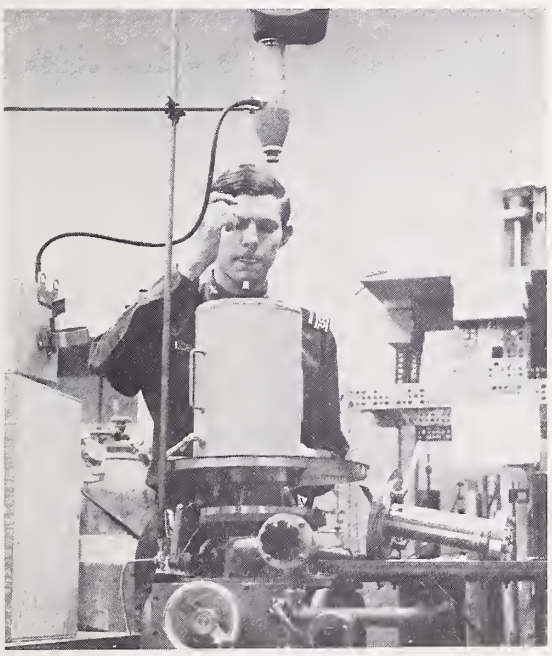
A continuation of Aerospace Structures with emphasis on the finite element method. Includes derivation of element stiffness for beam, two-dimensional plane and plate bending elements using assumed displacement functions. Computer solution to continuous beam, large scale plane and plate bending problems. *Final exam. Prereq: Mech* 453. *Sem hrs:* 3 *spring.*

Mech 495. *Special Topics* 1 (2)

Selected topics in mechanics. Fall 1975 and Spring 1976 offering: Studies in Applied Mechanics. *Final exam or final report. Prereq: Department permission. Sem hrs and offering time determined by department (not more than* 3 *sem hrs).*

Mech 499. *Independent Study* 0-2 (0)

Individual study, research, or design on a topic established with the permission of the department head. *Final report. Sem hrs:* 1 *to* 5 *fall or spring.*



Military Studies *(Mil Stu)*

Offered by the Deputy Commandant for Military Instruction

Mil Stu 121. *United States Air Force and National Security* 0 (2)

A study of the mission, organization and operation of the USAF, structured to give the cadet a basic understanding of the USAF's present posture and provide a background essential to later military and academic studies. *Final exam. Prereq:* 4/*C standing. Sem hrs:* 1 *fall.*

Mil Stu 122. *United States Air Force and National Security* 0 (2)

A study of the current international role of the USAF as it is carried out through the Unified Command structure in support of United States foreign policy. *Final exam. Prereq:* 4/*C standing. Sem hrs:* 1 *spring.*

Mil Stu 221. *Command Communications* 0 (2)

Development of communicative skills through the study and application of the principles and techniques of communications as they apply to the Air Force officer. *No final. Prereq:* 3/*C standing. Sem hrs:* 1 *fall.*

Mil Stu 222. *Command Communications* 0 (2)

Further development and application of communicative skills and techniques, with increased emphasis on cadet preparation for assuming instructional and leadership roles at the Air Force Academy and as officers in the USAF. *No final. Prereq:* 3/*C standing. Sem hrs:* 1 *spring.*

Mil Stu 321. *USAF Combat Operations and Tactics* 0 (2)

Introduction to the employment of offensive and defensive air power. AFM 1-1 provides the doctrinal foundation of principles and concepts for conducting combat air operations. Investigates the development and execution of aerial tactics. *Final exam. Prereq:* 2/*C standing. Sem hrs:* 1 *fall.*

Mil Stu 322. *USAF Combat Operations and Tactics* 0 (2)

Further investigation into the tactical employment of USAF combat units. Includes planning, deploying and supporting USAF combat forces. Includes a Force Employment Planning Exercise, Big Stick II. At completion of Force Planning Exercise, all cadets participate in a three week seminar on various leadership problems First Classmen encounter in supervising the Cadet Wing. *Final exam. Prereq:* 2/*C standing, Sem hrs:* 1 *spring.*

Mil Stu 420. *Officer Transition* 0 (2)

Preparation for the transition from cadet to officer status. Instruction provides the cadet with personal and practical aspects of life and work in the Air Force, with particular emphasis on career planning

and the rights, privileges and responsibilities of a second lieutenant entering his initial assignment. Offered the last half of spring semester. *Pass/Fail. No final. Prereq: 1/C standing. Sem hrs: ½ spring.*

Military Training *(Mil Tng)*

Offered by the Commandant of Cadets

Mil Tng 100. *Basic Cadet Training* 0 (0)

Approximately six-week transition period from civilian to military life. Indoctrination in the overall Academy program, cadet regulations, the Honor Code, manual of arms, drill, customs and courtesies and other general military subjects. Introduction to basic Air Force weapons, firing course (rifle and pistol), field encampment, parasailing and orientation flights in operational Air Force aircraft. *Pass/Fail. No final. Prereq: Concurrent enrollment in Phy Ed* 100. *Sem hrs: 5 summer.*

Mil Tng 200. *Third Class Summer Training* 0 (0)

Three weeks of training in any of the following options: Mil Tng 201, Mil Tng 452, Mil Tng 495, Armnshp 451, Armnshp 461, Armnshp 471, Armnshp 481. *All options are pass/fail. No final. Sem hrs: 2½ summer. Credit and duration of Mil Tng* 495 *may vary.*

Mil Tng 201. *Operation Noncom Program* 0 (0)

Conducted at selected Air Force bases. The program provides an insight into and appreciation of the role of enlisted personnel in the accomplishment of the Air Force mission. *Pass/Fail. No final. (Administered by the Director of Cadet Operations and Plans.) Sem hrs: 2½ summer.*

Mil Tng 210. *Survival, Evasion, Resistance, and Escape Training (SERE)* 0 (0)

Three-week Basic Aircrew Survival Training program of approximately two weeks on-base training covering global aspects of survival and code of conduct, and approximately one week of field training. Completion satisfies USAF Survival Training requirements. *Pass/Fail. No final. (Administered by the Military Training Division under the Deputy Commandant for Military Instruction.) Sem hrs:* 3 *summer.*

Mil Tng 300. *Second Class Summer Training* 0 (0)

Six weeks of training in any two of the following three-week programs: Mil Tng 301, Mil Tng 302, Mil Tng 303, Mil Tng 304, Mil Tng 305, Mil Tng 306, Mil Tng 307, Mil Tng 308, Mil Tng 310, Mil Tng 452, Mil Tng 495, Armnshp 433, Armnshp 461, Armnshp 471, Armnshp 481, Armnshp 490, Armnshp 493, Nav 493. *All options are pass/fail. No final. Sem hrs: 5 summer (2½ hours per three-week program.) Credit and duration of Mil Tng* 495 *may vary.*

Mil Tng 301. *Operation Third Lieutenant Program* 0 (0)

Conducted at selected Air Force bases. Provides exposure to an operational Air Force unit and functions of a junior officer. *Pass/Fail. No final. (Administered by the Director of Cadet Operations and Plans.) Sem hrs: 2½ summer.*

Mil Tng 302. *BCT Leadership Duty* 0 (0)

Leadership positions as instructors or noncommissioned officers (NCOs) in the cadet chain of command in the Basic Cadet Training program for the new Fourth Class. *Pass/Fail. No final. (Administered by the Deputy Commandant for the Cadet Wing and the Deputy Commandant for Military Instruction.) Sem hrs: 2½ summer.*

Mil Tng 303. *RECONDO Training* 0 (0)

Field tactical training conducted by the U.S. Army at Fort Carson and North Cheyenne Canyon. *Pass/Fail. No final. (Administered by the Military Training Division under the Deputy Commandant for Military Instruction.) Sem hrs: 2½ summer.*

Mil Tng 304. *Underwater Demolition and Open Circuit Scuba Training* 0 (0)

Diving training program conducted by the U.S. Navy at San Diego. Satisfactory completion results in being certified world-wide scuba qualified. *Pass/Fail. No final. (Administered by the Military Training Division under the Deputy Commandant for Military Instruction.) Sem hrs: 2½ summer.*

Mil Tng 305. *Boys State* 0 (0)

Leadership positions as counselors for high school juniors at various American Legion Boys State encampments. *Pass/Fail. No final. (Administered by the Director of Cadet Operations and Plans.) Sem hrs: 2½ summer.*

Mil Tng 306. *BSA Philmont* 0 (0)

Leadership positions at Philmont Scout Ranch in Cimarron, New Mexico, as rangers or instructors in

the staff camp areas. *Pass/Fail. No final. (Administered by the Director of Cadet Operations and Plans.) Sem hrs:* 2½ *summer.*

Mil Tng 307. *Composite Group Leadership Duty* 0 (0)

NCO leadership positions maintaining command, control, and accountability and providing billeting for all cadets taking summer academic courses and transient cadets using cadet area facilities. *Pass/Fail. No final. (Administered by the Deputy Commandant for the Cadet Wing.) Sem hrs:* 2½ *summer.*

Mil Tng 308. *Manpower Unlimited* 0 (0)

Leadership positions at the Academy as counselors for underprivileged children. *Pass/Fail. No final. (Administered by the Director of Plans and Programs under the Deputy Chief of Staff/Operations.) Sem hrs:* 2½ *summer.*

Mil Tng 310. *SERE Leadership Duty* 0 (0)

Leadership positions as instructors and as NCOs in the cadet chain of command for the Third Class SERE Training Program. *Pass/Fail. No final. (Administered by the Military Training Division under the Deputy Commandant for Military Instruction.) Sem hrs:* 2½ *summer.*

Mil Tng 330. *Summer Leadership Preparation* 0 (0)

Instruction and training for selected Third Class and Second Class cadets to prepare them for Second Class/First Class summer leadership or instructor positions. *Pass/Fail. No final. Prereq: Preselection for key summer leadership or instructor position. (Administered by the Deputy Commandant for the Cadet Wing and the Deputy Commandant for Military Instruction.) Sem hrs:* 1 *spring.*

Mil Tng 400. *First Class Summer Training* 0 (0)

Six weeks of training in either one six-week program, two three-week programs or a special program from the following listings:

a. Three-week programs: Mil Tng 401, Mil Tng 402, Mil Tng 403, Mil Tng 404, Mil Tng 405, Mil Tng 406, Mil Tng 407, Mil Tng 408, Mil Tng 410, Mil Tng 452, Armnshp 433, Armnshp 461, Armnshp 471, Armnshp 481, Armnshp 490, Armnshp 493, Nav 493. *All three-week options are pass/fail. No final. Sem hrs:* 2½ *summer.*

b. Six-week programs: Armnshp 400, Mil Tng 411, Science 499. *Armnshp* 400 *is a graded course with separate registration and separate scheduling. Mil Tng* 411 *and Science* 499 *require final reports and are pass/fail. Sem hrs:* 5 *summer.*

c. Special Programs: French 492, Mil Tng 495. *French* 492 *is a graded course with separate registration and separate scheduling. Final exam. Sem hrs:* 8 *summer. Mil Tng* 495 *sem hrs and duration may vary depending on the nature of the program.*

Mil Tng 401. *Operation Third Lieutenant Program* 0 (0)

Conducted at selected Air Force bases. Provides exposure to an operational Air Force unit and functions of a junior officer. *Pass/Fail. No final. (Administered by the Director of Cadet Operations and Plans.) Sem hrs:* 2½ *summer.*

Mil Tng 402. *BCT Leadership Duty* 0 (0)

Leadership positions as instructors or as officers in the cadet chain of command in the Basic Cadet Training program for the new Fourth Class. *Pass/Fail. No final. (Administered by the Deputy Commandant for the Cadet Wing and the Deputy Commandant for Military Instruction.) Sem hrs:* 2½ *summer.*

Mil Tng 403. *RECONDO Training* 0 (0)

Field tactical training conducted by the U.S. Army at Fort Carson and North Cheyenne Canyon. *Pass/Fail. No final. (Administered by the Military Training Division under the Deputy Commandant for Military Instruction.) Sem hrs:* 2½ *summer.*

Mil Tng 404. *Underwater Demolition and Open Circuit Scuba Training* 0 (0)

Diving training program conducted by the U.S. Navy at San Diego. Satisfactory completion results in being certified world-wide scuba qualified. *Pass/Fail. No final. (Administered by the Military Training Division under the Deputy Commandant for Military Instruction.) Sem hrs:* 2½ *summer.*

Mil Tng 405. *Boys State* 0 (0)

Leadership positions as counselors for high school juniors at various American Legion Boys State encampments. *Pass/Final. No final. (Administered by*

the Director of Cadet Operations and Plans.) Sem hrs: 2½ summer.

Mil Tng 406. *BSA Philmont* 0 (0)

Leadership positions at Philmont Scout Ranch in Cimarron, New Mexico, as rangers or instructors in the staff camp areas. *Pass/Fail. No final. (Administered by the Director of Cadet Operations and Plans.) Sem hrs: 2½ summer.*

Mil Tng 407. *Composite Group Leadership Duty* 0 (0)

Officer leadership positions maintaining command, control, and accountability and providing billeting for all cadets taking summer academic courses and transient cadets using cadet area facilities. *Pass/Fail. No final. (Administered by the Deputy Commandant for the Cadet Wing.) Sem hrs: 2½ summer.*

Mil Tng 408. *Manpower Unlimited* 0 (0)

Leadership positions at the Academy as counselors for underprivileged children. *Pass/Fail. No final. (Administered by the Director of Plans and Programs under the Deputy Chief of Staff/Operations.) Sem hrs: 2½ summer.*

Mil Tng 410. *SERE Leadership Duty* 0 (0)

Leadership positions as instructors and as officers in the cadet chain of command for the Third Class SERE Training Program. *Pass/Fail. No final (Administered by the Military Training Division under the Deputy Commandant for Military Instruction.) Sem hrs: 2½ summer.*

Mil Tng 411. *Air Training Command Leadership Duty* 0 (0)

Leadership positions with a Basic Military Training Squadron at Lackland AFB, Texas, as assistants to squadron commanders and as basic airmen training instructors and counselors. *Pass/Fail. No final. (Administered by the Director of Cadet Operations and Plans.) Sem hrs: 2½ summer.*

Mil Tng 452. *Basic Airborne Training* 0 (0)

Conducted at the U.S. Army Infantry School, Fort Benning, Georgia. Includes basic skills of static line parachute jumping. *Pass/Fail. No final. (Administered by the Military Training Division under the Deputy Commandant for Military Instruction.) Sem hrs: 2½ summer.*

Mil Tng 495. *Special Training Programs* 0 (0)

Special training, participation, observing, leadership, and/or instructing programs conducted to fill a temporary or unforeseen need or to test a new program or concept prior to full implementation. *Pass/Fail. No final. (Administered by the Deputy Commandant for Military Instruction.) Sem hrs and duration may vary depending on the nature of the program, not to exceed 7½ sem hrs.*

Navigation *(Nav)*

Offered by the Deputy Commandant for Military Instruction

Nav 371. *Descriptive Astronomy* 1 (1)

Discussion of fundamental concepts of astronomy. Examination of the physical aspects of the solar system: the sun, moon, planets, comets and meteors. Introduction to the physical nature and distribution of the stars. Discussion of the structure and origin of the universe. Planetarium presentations and telescope observations of celestial objects. Field trip to experience and analyze the motions of the heavens in an inflight environment. *Final report. Sem hrs: 2½ fall or 3 spring.*

See Science 480 for other navigation course.

Nav 470. *Navigation Indoctrination* 1 (2)

Introduction to basic air navigation procedures and equipment. Includes classroom and simulator instruction in preparation for flight missions. Encompasses air navigation from basic dead reckoning through map reading, radar, celestial and radio positioning techniques. Develops an insight into the requirements and responsibilities of a rated Air Force crew member through experience in a flying environment, on both local and cross-country flights. *Final exam. Prereq: 3/C, 2/C or 1/C standing. Sem hrs: 3 fall or spring.*

Nav 471. *Advanced Navigation* 1 (2)

Navigation procedures, fuel planning, and radio navigation are integrated into the cadet's knowledge from

the basic navigation course, Nav 470. Emphasizes the navigation proficiency required of a candidate in the early phases of Undergraduate Navigator Training. *Prereq: Nav* 470, *1/C standing (cadets desiring to take this course must contact the Navigation Division for approval prior to registration). Sem hrs:* 2½ *spring.*

Nav 490. *Navigation Concepts and Systems Development* 1 (1)

Discussion of avionics and systems presently available, such as inertial, Doppler, star trackers, and radar, and an indepth study of the theory underlying these systems. Analysis of navigation techniques and systems in the navigation trainers and in flight aircraft. Field trip to a facility involved in advanced navigation development or operations. *Final report. Prereq: Nav* 470 *or department head approval. Sem hrs:* 3 *fall or spring.*

Nav 493. *Cadet Navigation Instructor Training* 1 (1)

Trains selected cadets as instructors for navigation flying programs. Provides additional training in navigation techniques, and provides field training in astronomy and planetarium operation. To retain rating, qualified cadet instructors must maintain required instructor proficiency in subsequent semesters. (Fulfills ½ the requirement for Mil Tng 300 or Mil Tng 400.) *Pass/Fail. Prereq: Nav* 470. *Sem hrs:* 2½ *summer.*

See Mil Tng 100 for additional cadet flying administered by the Navigation Division.

Philosophy *(Philos)*

Offered by the Department of Political Science and Philosophy

Philos 210. *Introduction to Philosophy* 0 (1)

Brief examinations of several classical and contemporary philosophical issues. Issues include problems in human knowledge, moral philosophy, social philosophy, and the philosophy of religion. *Final exam. Prereq: 3/C or 2/C standing; concurrent enrollment in Law* 210 *(for scheduling purposes). Must be completed prior to the sixth semester. Sem hr:* 1 *fall or spring.*

Philos 330. *Introduction to the Philosophy of Science* 1 (1)

Basic assumptions and principles of the sciences are analyzed. Emphasizes the nature of the scientific method, the status of scientific laws, concepts of theory construction and scientific explanation, the use of probability notions, problems involved in the social sciences, and the relation between the sciences and the humanities, especially in the formation of values. Specific problems are discussed related to technology, the natural sciences, and the social sciences. *Final exam. Prereq: 2/C or 1/C standing or department permission. Sem hrs:* 2½ *fall.*

Philos 350. *Philosophical Analysis* 1 (1)

Classical and contemporary techniques of conceptual analysis as reflected in the traditional problems of metaphysics, epistemology, and the philosophy of religion. *Final exam. Prereq: 3/C, 2/C or 1/C standing. Sem hrs:* 2½ *fall.*

Philos 370. *Introduction to Symbolic Logic* 1 (1)

Propositional calculus, formal languages, truth tables, and proofs. Predicate calculus, models, Gentzen-type rules, axioms, quantifiers, and equality. Definitions. *Final exam. Prereq: Completed or enrolled in Comp Sci* 200. *Sem hrs:* 3 *spring.*

Philos 382. *American Philosophy* 1 (1)

An examination of the philosophic background of Puritanism, the Revolutionary period, transcendentalism and pragmatism with special reference to the thought of major American philosophers such as Pierce, James, Royce, Santayana, Dewey, and Whitehead. *Final exam. Prereq: Completed or enrolled in Philos* 210. *Sem hrs:* 3 *spring.*

Philos 400. *Great Religions of the World* 1 (1)

A comparative and critical study of the world's great religions which emphasizes the relation of religion to morality; the nature of religious aspirations; the spiritual influence of religion upon culture and society; the sacred scriptures; the concept of God, salvation, evil, and the afterlife. Includes a survey of religious thought and practice through a study of Christianity, Buddhism, Judaism, Hinduism, Confucianism, and Islam. *Final exam. Prereq: 3/C, 2/C or 1/C standing. Sem hrs:* 2½ *fall or* 3 *spring.*

Philos 440. *Ethics* 1 (1)

Critical study of major ethical themes such as responsibility, freedom, obligation, duty, human rights, and human dignity. Background to these themes are developed by reading major Western philosophers. Themes are related to typical moral issues such as those arising in the context of war. *Final exam. Prereq: Philos* 210 *or 1/C or 2/C standing. Sem hrs:* 2½ *fall or* 3 *spring.*

Philos 495. *Special Topics* 1 (1)

Selected topics in Philosophy. Fall 1975 offering: "Understanding Love"; Spring 1976 offering: "War and Violence." *Final exam or final report. Prereq: Department permission. Sem hrs:* 2½ *fall or* 3 *spring.*

Philos 499. *Independent Study* 1 (0)

Philosophical research guided by an instructor. Topics and meetings arranged with the instructor. *No final. Prereq: Department permission. Sem hrs:* 2½ *fall or* 3 *spring.*

Physical Education *(Phy Ed)*

Offered by the Department of Physical Education under the Director of Athletics

Phy Ed 100. *Basic Physical Training* 0 (0)

Preparation for strenuous physical education and athletics by development of physical strength, endurance, agility, and coordination by means of conditioning exercises, obstacle course, and sports competition. Physical fitness and swimming tests. Special instruction in swimming and conditioning as needed. *Pass/Fail. Sem hrs:* 2 *summer.*

Phy Ed 105. *Competitive Athletics* 0 (0)

Intramural and/or intercollegiate athletics. *Pass/Fail. Sem hr:* 1 *fall.*

Phy Ed 106. *Competitive Athletics/ Physical Fitness Test* 0 (0)

Intramural and/or intercollegiate athletics plus passing cadet minimums on Physical Fitness Test. *Pass/Fail. Sem hr:* 1 *spring.*

Phy Ed 120. *Gymnastics, Boxing, Swimming, Physical Fitness Methods* 0 (2)

Instruction in gymnastics, boxing, swimming, and physical fitness methods. Remedial instruction in swimming for designated cadets. *Sem hrs:* 1 *fall and spring.*

Phy Ed 205-206. *Competitive Athletics/ Physical Fitness Test* 0 (0)

Intramural and/or intercollegiate athletics plus passing cadet minimums on Physical Fitness Test. *Pass/Fail. Sem hrs:* 1 *fall and spring.*

Phy Ed 220. *Lifesaving, Badminton, and Two Carry-Over Skills* 0 (2)

Instruction in lifesaving, badminton, and two carry-over skills (tennis, golf, volleyball, or handball). *Sem hrs:* 1 *fall and spring.*

Phy Ed 305-306. *Competitive Athletics/ Physical Fitness Test* 0 (0)

Intramural and/or intercollegiate athletics plus passing cadet minimums on the Physical Fitness Test. *Pass/Fail. Sem hrs:* 1 *fall and spring.*

Phy Ed 320. *Advanced Judo, Survival Swimming, and Two Carry-Over Skills* 0 (2)

Instruction in advanced judo, survival swimming, and two carry-over skills (tennis, golf, volleyball, or handball). Carry-over skill received in Phy Ed 220 will not be repeated. *Sem hrs:* 1 *fall and spring.*

Phy Ed 405-406. *Competitive Athletics/ Aerobics Test* 0 (0)

Intramural and/or intercollegiate athletics and must pass Aerobics Fitness Test. *Pass/Fail. Sem hrs:* 1 *fall and spring.*

Phy Ed 420. *Advanced Unarmed Combat, Advanced Squash, and Two Electives* 0 (2)

Instruction in advanced unarmed combat, advanced squash and two electives (either advanced golf, advanced tennis, basic ice skating, diving, basketball, racquetball, or aerobics). Remedial instruction in swimming for designated cadets. *Prereq: Phy Ed* 220 *or* 320 *as pertains to carry-over skills. Sem hrs:* 1 *fall and spring.*

Physics *(Physics)*

Offered by the Department of Physics

Physics 211. *General Physics* 1 (1)

Fundamental principles of kinematics, dynamics, gravitation, and introductory electrostatics with emphasis on conservation laws and use of vectors and calculus. Lab. *Final exam. Prereq: Math* 123 *or department permission. Sem hrs:* 2½ *fall or* 3 *spring.*

Physics 212. *General Physics* 1 (1)

Fundamental principles of electricity, magnetism, and wave motion with emphasis on conservation laws and use of vectors and calculus. Includes introduction to selected topics in optics and modern physics. Lab. *Final exam. Prereq: Physics* 211; *Math* 123 *or department permission. Sem hrs:* 2½ *fall or* 3 *spring.*

Physics 335. *Modern Physics for Engineers* 1 (1)

Introduction to modern physics with emphasis on applications to the various fields of engineering and science. Fundamental topics of modern physics to include special relativity, origin of quantum theory, atomic and molecular structure, electromagnetic radiation, nuclear forces and reactions, fundamental particles, radioactivity and special topics of current interest to engineering and science majors. *Final exam. Prereq: Physics* 212. *Sem hrs:* 2½ *fall or* 3 *spring.*

Physics 341. *Laboratory Techniques* 1 (2)

Basic introduction to laboratory skills and techniques to develop instrumental techniques and reinforce concepts of physical behavior. *No final. Prereq: Physics* 212. *Sem hrs:* 2½ *fall.*

Physics 355. *Classical Mechanics* 1 (1)

Fundamentals of classical mechanics including Newton's, Lagrange's, and Hamilton's formulations. Emphasizes relationship of general principles to quantum theory. *Final exam. Prereq: Physics* 211; *Math* 351 *or department permission. Sem hrs:* 2½ *fall.*

Physics 363. *Introduction to Modern Physics I* 1 (1)

Review of mechanics and introduction to special relativity. Dual nature of light and selected topics in physical optics. Introduction to quantum theory; application to atomic and molecular structure, theory of solids, structure and properties of the nucleus. *Final exam. Prereq: Physics* 212 *or department permission. Sem hrs:* 2½ *fall.*

Physics 364. *Introduction to Modern Physics II* 1 (1)

Continuation of Physics 363. *Final exam. Prereq: Physics* 363 *in preceding semester. Sem hrs:* 3 *spring.*

Physics 370. *Introductory Space Science* 1 (1)

A conceptual survey of the space environment including such topics as planetary atmospheres, solar phenomena, trapped-radiation belts, radio astronomy, extraterrestrial life and space exploration. Field trip. Oral presentation or term paper. *Prereq: Physics* 212. *Sem hrs:* 2½ *fall or* 3 *spring.*

Physics 382. *Laser Physics and Light* 1 (1)

Theory of laser operation. Optical phenomena including interference, polarization, coherence, and absorption. Solid-state, liquid, chemical, and gaseous lasers. Various applications including weapons, communications, and holography. *Final exam. Prereq: A or B in Physics* 212. *Sem hrs:* 3 *spring.*

Physics 430. *Introduction to Modern Physics* 1 (1)

Applications of modern physics with emphasis in the field of civil engineering, including health physics considerations, radiological shielding considerations, nuclear reactors and nuclear weapons effects. Fundamental topics of modern physics including the electromagnetic radiation, models of the atom, mass-energy equivalence, and topics in radiation. *Final report, final exam. Prereq: Physics* 212 *(Not open to students with credit for Physics* 335 *or* 364.) *Sem hrs:* 2½ *fall or* 3 *spring.*

Physics 461. *Electromagnetic Theory I* 1 (1)

Basic formulation of electromagnetic field theory including the development of Maxwell's equations and their application to electrostatics, magnetostatics, and the transmission of electromagnetic radiation through dielectrics, conductors, and ionized gases. Derivation of multipole radiation theory and the theory of fields of rapidly moving charges. The development of the covariance of electrodynamics. *Final exam. Prereq: Physics* 212; *Math* 330; *completed or enrolled in Math* 351 *and department permission. Sem hrs:* 2½ *fall.*

Physics 462. *Electromagnetic Theory II* 1 (1)

Continuation of Physics 461. *Final exam. Prereq: Physics* 461 *in the preceding semester. Sem hrs:* 3 *spring.*

Physics 465. *Statistical Physics* 1 (1)

Quantum statistical mechanics as an underlying theory of systems in contact. Applications include low temperature physics, magnetism, boson and fermion gases, ideal gases, kinetic theory and thermodynamics. *Final exam. Prereq: Physics* 364, *Physics* 335 *and department permission. Sem hrs:* 3 *spring.*

Physics 473. *Quantum Mechanics I* 1 (1)

Postulational basis of quantum mechanics. Techniques of solution of the wave equation. Operators, angular momentum, spin, symmetry and statistics. Perturbation theory. Quantum theory applied to physical problems. *Final exam. Prereq: Physics* 364 *or Physics* 335, *Math* 330, *completed or enrolled in Math* 351, *or department permission. Sem hrs:* 2½ *fall.*

Physics 474. *Quantum Mechanics II* 1 (1)

Continuation of Physics 473. *Final exam. Prereq: Physics* 473. *Sem hrs:* 3 *spring.*

Physics 490. *Advanced Physics Lab* 2 (3)

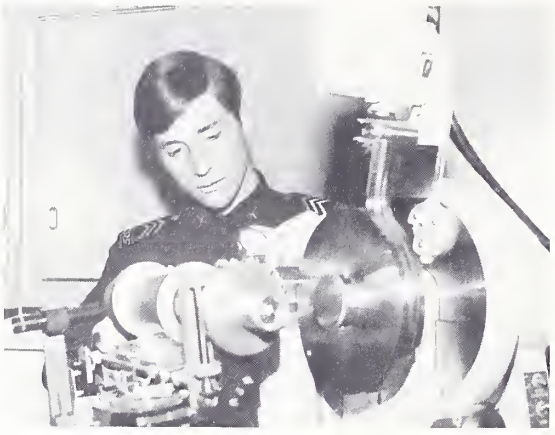
Selected experiments to develop laboratory skills and reinforce the concepts of physical ideas. *No final. Prereq: Physics* 341 *or department permission. Sem hrs:* 6 *spring.*

Physics 495. *Special Topics* 1 (1)

Selected topics in physics. *Final exam or final report. Prereq: Department permission. Sem hrs and offering time determined by department (not more than* 3 *sem hrs).*

Physics 496. *Science and the Future* 1 (1)

An analysis of the relationship of science to current and future problems. Critically examines the potential applications of modern science to these problems and the general effect of possible solutions on the



armed forces, industry and society. *Field trip. Final report. Prereq: 1/C or 2/C standing. Sem hrs:* 3 *spring.*

Physics 499. *Independent Study* 1-2 (0)

Individual research under the direction of a faculty member. *No final. Prereq: Department permission. Sem hrs: 2½ to 5 fall or spring.*

Political Science *(Pol Sci)*

Offered by the Department of Political Sciences and Philosophy

Pol Sci 211. *The American Political System* 1 (1)

First of a two-course sequence introducing central concepts of political science. Develops the theories of democracy, constitutionalism, and federalism in the context of American domestic politics. Emphasizes the functional aspects of the national system of government and concludes with an analysis of contemporary issues and problems. *Final exam. Pol Sci* 211 *and* 212 *must be taken in consecutive semesters. Sem hrs: 2½ fall or* 3 *spring.*

Pol Sci 212. *The International Political System* 1 (1)

Second of a two-course sequence introducing central concepts of political science. International politics as a subject of study. Emphasis on the nature of the international political system, the actions and interactions of states in this system, and contemporary trends in international politics. *Final exam. Prereq: Pol Sci* 211 *in preceding semester. Sem hrs: 2½ fall or* 3 *spring.*

Pol Sci 232. *Comparative Politics* 1 (1)

An introduction to the models, concepts and analytical frameworks used to compare political systems. Emphasis is on the functional approach to politics and political change. *Final exam. Prereq: Pol Sci* 211. *Sem hrs:* 3 *spring.*

Pol Sci 349. *Political Analysis* 1 (1)

Introduction to the philosophical and methodological foundations of contemporary political science. Emphasis on current research methods in domestic and international politics: interview/survey research, content analysis, simulation and experimentation, and systematic case studies. Research paper. *Prereq: Pol Sci* 211. *Sem hrs: 2½ fall.*

Pol Sci 352. *Political Theory* 1 (1)

An overview of political thought from Machiavelli to the present with a brief introductory section on classical political theory. The consideration of basic political problems such as equality, power, and estrangement in terms of how political theorists dealt with them in the past and how these problems relate to the present. *Research paper. Prereq: Pol Sci* 211. *Sem hrs:* 3 *spring.*

Pol Sci 371. *Political Parties and the Democratic Process* 1 (1)

An in-depth view of the dynamics of American politics within the party system. Emphases on party functions, components, types, ideologies, membership, organization, leadership selection, financing and discipline. Last portion of the course devoted to issues of campaigning and reform. *Final exam. Prereq: Pol Sci* 211. *Sem hrs: 2½ fall.*

Pol Sci 383. *American Foreign Policy: Process and Issues* 1 (1)

Analysis of U. S. foreign policy in the post-1945 period. Examination of the policy-making environment and the roles of the President, the Department of State, the Congress, and various executive departments. Case studies. *Final exam. Prereq: Pol Sci* 212. *Sem hrs: 2½ fall.*

Pol Sci 385. *Public Administration and US Public Policy* 1 (1)

Analyzes the formulation and execution of public policy in America as a bureaucratic phenomenon. Includes study of organization theory, administrative process, structure of US federal administrative establishment, decision-making theory, bureaucratic politics, and policy process and policy analysis. Concludes with a study of the administration of actual public programs and a concentration on issues of public management. *Research paper. Prereq: Pol Sci* 211. *Sem hrs:* 3 *spring.*

Pol Sci 412. *Defense Policy* 1 (1)

Relationships among military policy, foreign policy, and national security policy. Formulation of defense policy in terms of external threats, American political climate, and impact of military technology. Institutional machinery for making strategy. *Final exam. Prereq: Pol Sci* 211 *or department permission. Sem hrs: 2½ fall or* 3 *spring.*

Pol Sci 421. *Political Violence and Revolutionary Change* 1 (1)

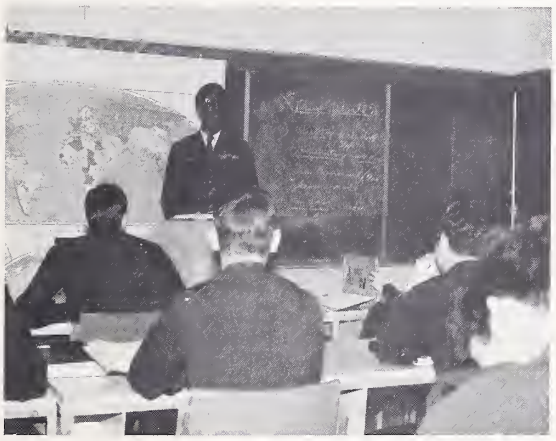
Focuses on the use of organized violence by non-governmental groups designed to achieve political objectives of various kinds, the social conditions underlying such actions, the factors which account for the success or failure of these efforts, and the resulting effects on the larger socio-political context. Particular emphasis is placed on insurgency warfare. *Final exam. Prereq: Pol Sci* 212. *Sem hrs:* 2½ *fall.*

Pol Sci 456. *International Organization* 1 (1)

Examines how the structure and functions of global international organizations (principally the United Nations) and regional international organizations (such as the North Atlantic Treaty Organization) are used by national governments to further foreign policy objectives as well as transnational human interests. *Final exam. Prereq: Pol Sci* 212. *Sem hrs:* 2½ *fall.*

Pol Sci 460. *Comparative Defense Policy* 1 (1)

A comparative study of selected defense policies and policy making with emphasis on the Soviet Union, China, selected Western European states, Japan and India. Case studies examine variations in doctrine, weapons acquisition, and force deployment and use. *Final exam. Prereq: Pol Sci* 212. *Sem hrs:* 3 *spring.*



Pol Sci 472. *Politics of the USSR* 1 (1)

Studies the communist system of government emphasizing both the internal political processes and external relations of the USSR. The effects of ideology, national interest, internal forces and foreign relations are analyzed. In the examination of foreign policy, emphasis is placed on the post-1945 era. *Final exam. Prereq: Pol Sci* 212. *Sem hrs:* 2½ *fall.*

Pol Sci 473. *Politics of Asia* 1 (1)

Surveys government and politics of selected countries in East Asia with emphasis on China and Japan. Course includes examination of China's expanding power and influence, implications of a resurgent Japan and other current Asian issues. *Final exam. Prereq: Pol Sci* 212. *Sem hrs:* 2½ *fall.*

Pol Sci 474. *Politics of Western Europe* 1 (1)

Political developments in Western Europe from the Marshall Plan to the present. Examines institutional arrangements and political strategies of major Western European nations. Considers potential of a united Europe as a third force. *Final exam. Prereq: Pol Sci* 212. *Sem hrs:* 3 *spring.*

Pol Sci 476. *Politics of Latin America* 1 (1)

Comparative study of selected Latin American political systems. Fundamental factors affecting political stability in Latin America; the interrelationship of economic, military, political, and social factors in the growth of Latin American political systems; and the interhemisphere relations. *Final exam. Prereq: Pol Sci* 212. *Sem hrs:* 3 *spring.*

Pol Sci 478. *Politics of Africa and the Middle East* 1 (1)

Analysis of the major political trends within Africa and the Middle East during the 20th Century. The colonial epoch, independence era, contemporary political systems, and major issues in conflict are surveyed. *Research paper. Prereq: Pol Sci* 212. *Sem hrs:* 3 *spring.*

Pol Sci 482. *Congress* 1 (1)

The study of Congress as a political institution. Topics include elections, member relations with constituents, policy roles, leadership, the committee system, seniority, procedures, and oversight of administrative agencies. Field trip to Denver to view the Colorado State Legislature (if in session) is required. *Final exam. Prereq: Pol Sci* 211. *Sem hrs:* 2½ *fall.*

Pol Sci 484. *The Presidency* 1 (1)

An in-depth study of the American Presidency, with emphasis on the office of the Presidency, Presidential selection, roles of the President, and the personalities and working styles of the modern presidents. *Final exam. Prereq: Pol Sci* 211. *Sem hrs:* 3 *spring.*

Pol Sci 495. *Special Topics* 1 (1)

Selected topics in political science. Fall 1975 offering: Civil-Military Relations. Spring 1976 offering: The Development of Strategy and Arms Control. *Final exam or final report. Prereq: Department permission. Sem hrs and offering time determined by department (not more than* 3 *sem hrs).*

Pol Sci 499. *Independent Study* 1-2 (0)

Individual study or research in a carefully selected topic conducted on a tutorial basis. *Research paper or directed reading. Prereq: Department permission. Sem hrs:* 2 *to* 5 *fall or spring.*

Science *(Science)*

Offered by various departments and divisions as noted

Science 350. *Linear Systems Analysis* 1 (2)

Modeling of physical systems. Joint study of mechanical and electrical systems described by linear first and second order differential equations with constant coefficients. Electrical analogies, frequency response, introduction to Bode plots, and introduction to the analog computer. Includes operation of linear computer elements and readout devices, programming, selecting maximum values, magnitude scaling, time scaling, static check, and program check. Lab. *Final project. Prereq: Physics* 212; *completed or enrolled in El Engr* 331; *completed or enrolled in Math* 351. *(Adminstered by the Department of Astronautics and Computer Science with instructors from all Engineering Science Departments.) Sem hrs:* 2½ *fall or* 3 *spring.*

Science 402. *Professional Engineering Development* 0 (1)

Review of mathematics, chemistry, physics, and engineering sciences in preparation for the Colorado Engineer-in-Training examination. Taking this exam is optional at end of course. *Prereq: 1/C standing; any Basic or Engineering Sciences major. (Administered By Department of Civil Engineering, Engineering Mechanics and Materials) Sem hrs: none spring.*

Science 451. *Engineering Applications of Digital Computers* 1 (1)

A study of computer oriented methods to solve a wide range of problems in the engineering sciences. Includes predictor-corrector integration schemes, Gauss-Seidel iteration, least squares, finite difference formulation, Monte Carlo methods, dynamic programming and other topics. Selected problems solved via the digital computer. *Final project. Prereq:* Math 351 *or Math* 341. *1/C or 2/C standing with department permission. (Administered by Department of Astronautics and Computer Science.) Sem hrs:* 2½ *fall or* 3 *spring.*

Science 452. *Bioengineering* 1 (1)

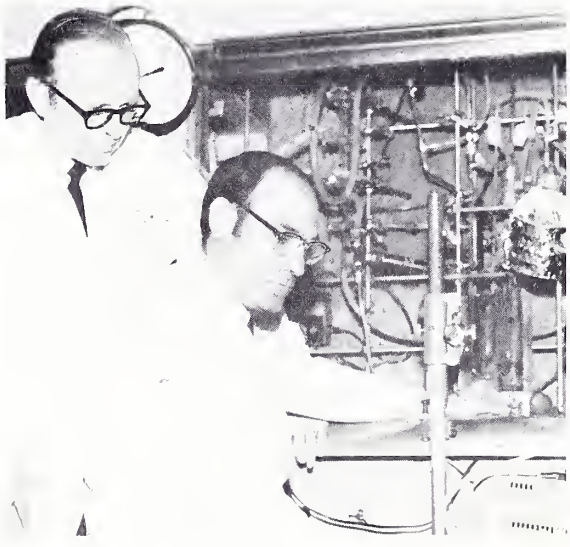
Application of engineering techniques to solution of problems in the life sciences. Review of selected life science systems, mathematical model making, and design of instrumentation for physiological monitoring. *Final report. Prereq: El Engr* 331. *(Administered by Department of Life and Behavorial Sciences in fall, Department of Electrical Engineering in spring) Sem hrs:* 2½ *fall or* 3 *spring.*

Science 480. *Introduction to Applied Astronomy* 1 (1)

Spherical astronomy topics of positions, motions, stellar coordinate systems, time, and navigation. Stellar astronomy topics of distances, motions, luminosities, masses, distribution of stars, clusters, galaxies, and cosmology. Planetarium, telescope, and inflight laboratory experience. Field trip to a prominent astronomy or space facility. *Final project. Prereq:* 2/C *or* 1/C *standing or department permission. (Administered by Navigation Division.) Sem hrs:* 2½ *fall or* 3 *spring.*

Science 499. *Summer Research* 0 (0)

Observation and participation in advanced research projects with military and civilian agencies working on defense-oriented problems at locations throughout the United States. *Final report. Not graded: Performance report rendered by research sponsor. Administered by the Director of Faculty Research. Sem hrs: 5 summer. Fulfills requirement for Mil Tng* 400, *First Class Summer Training.*



ACADEMIC MAJORS

Aeronautical Engineering Major

Administered by the Department of Aeronautics

The Aeronautical Engineering Major is a sequence of courses in which cadets may emphasize aircraft flight mechanics, propulsion, aerodynamics or structures. Successful completion results in the degree of Bachelor of Science in Aeronautical Engineering.

The following substitution in the core curriculum is required:

Aero 361. Thermofluid Dynamics — replaces Aero 332

In addition to the core curriculum, the following courses are required for the major:

Aero 350. Aeronautical Laboratory
Aero 362. Aerodynamics
Aero 363. Heat Transfer
Aero 456. Flight Mechanics I
Aero 461. Propulsion I
Math 351. Applied Differential Equations
Mech 361. Vector Engineering Mechanics
Mech 362. Mechanics of Materials
Mech 373. Introduction to Aerospace Structures
Physics 335. Modern Physics for Engineers

Three course units with emphasis in aerodynamics, aerospace propulsion, aerospace structures, or flight mechanics

Four course units selected with approval of faculty advisor

Astronautical Engineering Major

Administered by the Department of Astronautics and Computer Science

The major in Astronautical Engineering is designed to provide a broad foundation for effective performance in engineering. Special emphasis is placed on astrodynamics, aerospace systems design and control systems including weapon delivery systems. Thus the student is prepared for an Air Force career in space technology and aerospace avionics engineering.

The following substitution in the core curriculum is required:

Aero 361. Thermofluid Dynamics — replaces Aero 332

In addition to the core curriculum, the following courses are required for the major:

Aero 456. Flight Mechanics I
Astro 450. Principles of Airborne Fire Control
Astro 451. Astrodynamics
Astro 452. Linear Control System Analysis
Astro 453. Advanced Astrodynamics
Astro 454. Inertial Navigation and Automatic Guidance
Math 351. Applied Differential Equations
Math 360. Linear Algebra
Mech 361. Vector Engineering Mechanics
Mech 362. Mechanics of Materials
Physics 335. Modern Physics for Engineers
Science 350. Linear Systems Analysis
A two course unit design sequence in control systems or space vehicles
One course unit from offerings of the Engineering Science Division
Two course units from the offerings of all departments (these may include Armnshp 400 or academic courses taught by the Navigation Division)

Atmospheric Science Minor

Administered by the Department of Physics

The Minor in Atmospheric Science is for the student interested in the environment in which the Air Force operates. It provides a background especially valuable to any rated officer and a foundation for possible future graduate study in Atmospheric Science. By completing the following five courses, cadets can earn a minor in Atmospheric Science in conjunction with a major in Basic Sciences or a major in Physics:

Atm Sci 250. Introduction to Atmospheric Science
Atm Sci 351. Physical Processes in the Atmosphere
Atm Sci 380. Weather Forecasting Techniques
Atm Sci 444. Dynamics of the Atmosphere
Atm Sci 450. Atmospheric Thermodynamics, Statics and Radiation

(Supplementary courses suggested, but not required for this minor, are Atm Sci 495, Physics 370 and Geog 360).

Basic Sciences Major

Administered by the Basic Science Division

The Major in Basic Science is intended for the student whose ability and interests lie in the area of basic sciences, or who elects to obtain a broad background in science as compared to an in-depth specialization in only one of the areas of basic science. This major allows the cadet considerable latitude in selecting courses from a broad spectrum of science-oriented offerings that will meet his academic goals. The cadet is required to diversify within the areas of basic sciences by having to complete not less than two course units from three of the following disciplines: Chemistry, Computer Science, Life Science, Mathematics and Physics. At the same time he may specialize by using the option spaces provided. A minor in Atmospheric Science is available for the cadet desiring an additional area of emphasis in the applied sciences. This minor could be used in future graduate studies.

In addition to the core curriculum, the following courses are required for the major:

Two course units from the offerings of one of the five departments listed above.
Two course units from the offerings of a second of the five departments listed above.
Two course units from the offerings of a third of the five departments listed above.
Six course units from the offerings of the Basic or Engineering Sciences Divisions or Nav 371.

Five course units from the offerings of any academic department or the Navigation Division (these may include Armnshp 400).

Atm Sci 250. Introduction to Atmospheric Science

Atm Sci 351. Physical Processes in the Atmosphere

Atm Sci 380. Weather Forecasting Techniques

Atm Sci 444. Dynamics of the Atmosphere

Atm Sci 450. Thermodynamics and Statics of the Atmosphere

(Supplementary courses suggested, but not required for this minor, are Atm Sci 495, Physics 370 and Geog 360.)

Behavioral Sciences Major

Administered by the Department of Life and Behavioral Sciences

The Major in Behavioral Sciences provides the cadet with a facility for understanding human behavior, the capability for handling human problems throughout his career as an Air Force officer, and the basis for his continuing development as a military leader. The major is divided into two areas of emphasis: Individual Behavior and Organizational Behavior. The factual knowledge and concepts developed are contemporary in scope and of particular importance to the education of all officers in operational command positions and those contemplating a career in behavioral science research, human factors engineering, personnel psychology, social actions, clinical psychology, and organizational behavior.

In addition to the core curriculum the following courses are required for the major:

Beh Sci 331. Statistical Methods Applied to Behavioral Science

Beh Sci 352. Social Psychology

Beh Sci 435. Learning

Beh Sci 490. Counseling

{ Beh Sci 351. Cultural Anthropology
-or-
Beh Sci 360. Sociology }

Individual Behavior

Beh Sci 350. Psychobiology

Beh Sci 370. Tests and Measurements

Beh Sci 372. Experimental Psychology

Beh Sci 470. Human Factors and Perceptual Processes

Three additional course units from the Beh Sci course offerings

Organizational Behavior

Beh Sci 464. Organizational Behavior-Practicum

Beh Sci 477. Organizational and Industrial Psychology

Mgt 336. Introduction to Management and Organizations

Mgt 339. Introduction to Management Science

Mgt 361. Personnel Management and Industrial Relations

Mgt 470. Organizational Theory Seminar

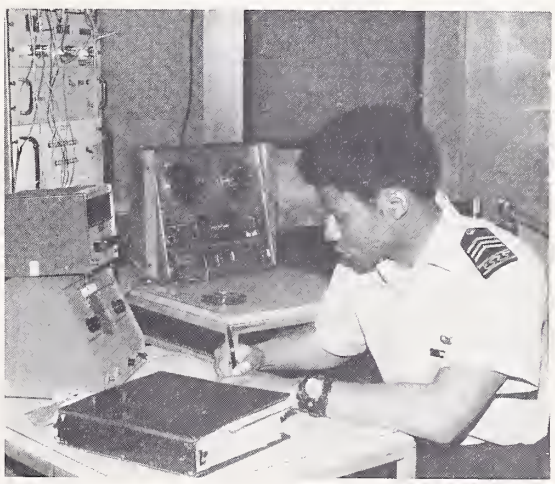
Mgt Option. From approved list

Five course units from the offerings of all departments (these may include Armnshp 400 or academic courses taught by the Navigation Division)

Chemistry Major

Administered by the Department of Chemistry

The Major in Chemistry is recommended for those who are interested in chemical or biochemical research or applications. It provides fundamental knowledge in analytical, inorganic, organic and physical chemistry and allows the cadet to select one or two of these areas for advanced study. The major is designed to prepare cadets for a junior officer position in research, development, or graduate training. It emphasizes the use of laboratory methods for reinforcement of lecture material and individual research projects. Cadets successfully completing this major are awarded the degree of Bachelor of Science in Chemistry.



In addition to the core curriculum, the following courses are required for the major:

Chem 222. Analytical Chemistry (only required for those who do *not* take Chem 101-102 or Chem 121-122)
Chem 233-234. Organic Chemistry I and II
Chem 243-244. Organic Chemistry I and II Lab
Chem 333. Instrumental Analysis
Chem 335-336. Physical Chemistry I and II
Chem 344. Physical Chemistry Lab
Chem 431. Theoretical Inorganic Chemistry
Chem 443. Advanced Physical Chemistry Lab
Math 351. Applied Differential Equations
Two science course units selected with approval of the faculty advisor
Two course units from the offerings of the Department of Chemistry, selected with approval of the faculty advisor
Two course units from the offerings of all departments (these may include Armnshp 400 or academic courses taught by the Navigation Division).

This major fulfills the recommendations of the Committee on Professional Training of the American Chemical Society. Cadets in this major should take German or Russian to satisfy the core language requirement.

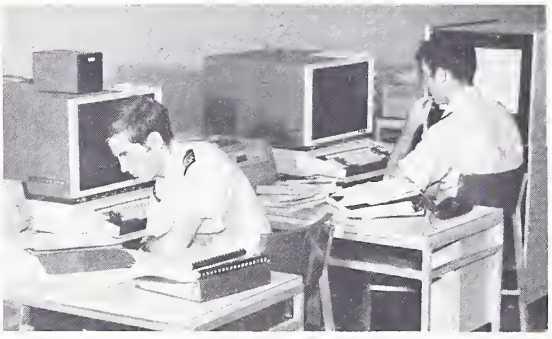
Civil Engineering Major

Administered by the Department of Civil Engineering, Engineering Mechanics and Materials

The Major in Civil Engineering provides a well balanced program stressing the fundamentals common to the many areas of the civil engineering profession. The major is designed to prepare cadets for duty in the Air Force with some specialization in the civil engineering discipline including research, development, design, and construction of facilities to support manned and unmanned weapon systems and the space program. The major provides excellent preparation for graduate study in any of the civil engineering areas. Cadets successfully completing this major are awarded the degree of Bachelor of Science in Civil Engineering.

In addition to the core curriculum, the following courses are required for the major:

Civ Engr 340. Surveying
Civ Engr 366. Fundamental Hydraulics
Civ Engr 432. Construction Engineering
Civ Engr 441. Soil Mechanics
Civ Engr 450. Properties of Materials Laboratory
Civ Engr 451. Structural Analysis
Civ Engr 453. Structural Steel Design
Civ Engr 455. Reinforced Concrete Design
Math 351. Applied Differential Equations
Mech 361. Vector Engineering Mechanics
Mech 362. Mechanics of Materials
Physics 430. Introduction to Modern Physics
Three civil engineering related course units selected with department permission
Two course units from the offerings of all departments (these may include Armnshp 400 or academic courses taught by the Navigation Division)



Computer Science Major

Administered by the Department of Astronautics and Computer Science

The Major in Computer Science provides a broad background in computer programming, languages, systems and applications with emphasis on electronic digital computers. The aim of this major is to provide officers who are highly qualified in the rapidly growing areas of computer research and the application of computers to complex scientific, engineering and information systems.

In addition to the core curriculum, the following courses are required for the major:

Comp Sci 362. Computer Simulation
Comp Sci 380. Data Structures
Comp Sci 381. Computers and Programming
Comp Sci 463. Information Retrieval
Comp Sci 483. Operating Systems
Comp Sci 484. Programming Systems

El Engr 345. Computer Analysis of Continuous Systems
Mgt 460. Operations Analysis I
Math 341. Introductory Numerical Analysis
Math 357. Probability
Mech. 361. Vector Engineering Mechanics
Philos 370. Introduction to Symbolic Logic
Science 451. Engineering Applications of Digital Computers
Two computer science related course units selected with approval of the faculty advisor
Two course units from the offerings of all departments (these may include Armnshp 400 or academic courses taught by the Navigation Division).

Economics Major

Administered by the Department of Economics, Geography and Management

The Major in Economics is designed to provide the cadet with the capability of performing economic analysis, especially of resource allocation problems associated with national security. The major is constructed on a solid foundation of economic theory and is extended by training in quantitative analysis techniques and by study in alternative specialized fields of economics.

In addition to the core curriculum, the following courses are required for the major:

Econ 333. Price Theory
Econ 456. Macroeconomic Theory
Econ 465. Introduction to Econometrics
Geog 372. Economic Geography
Mgt 331. Statistical Decision Methods
Six course units from the offerings of the Departmen of Economics, Geography and Management, selected with approval of the faculty advisor
Six course units from the offerings of all departments (these may include Armnshp 400 or academic courses taught by the Navigation Division)

Electrical Engineering Major

Administered by the Department of Electrical Engineering

The Major in Electrical Engineering is designed to combine a broad education in the engineering sciences with a study in depth in the electronics, communications, and system response fields. Cadets who successful complete this major are awarded the degree of Bachelor of Science in Electrical Engineering.

The following substitution in the core curriculum is required:

El Engr 341. Introduction to Electronics replaces El Engr 332

In addition to the core curriculum, the following courses are required for the major:

El Engr 342. Electronic Devices
El Engr 343. Fundamentals of Electromagnetic Fields
El Engr 344. Electromagnetic Transmission and Radiation
El Engr 345. Computer Analysis of Continuous Systems
El Engr 346. Signal and System Analysis
El Engr 441. Instrumentation Systems
El Engr 445. Computer Analysis of Discrete Systems
El Engr 447. Communications Systems
Math 351. Applied Differential Equations
Mech 361. Vector Engineering Mechanics
Physics 335. Modern Physics for Engineers
One design course unit from the Engineering Sciences Division
Two course units from the offerings of the Basic or Engineering Sciences Divisions selected with approval of the faculty advisor
Three course units from the offerings of all departments (these may include Armnshp 400 or academic courses taught by the Navigation Division)

Engineering Mechanics Major

Administered by the Department of Civil Engineering, Engineering Mechanics and Materials

The Major in Engineering Mechanics is designed to provide engineers with a broad base of knowledge in fundamental engineering with depth in the areas of dynamics, stress analysis, or materials engineering. The major provides an excellent foundation for further education in a variety of fields. Cadets who successfully complete this major are awarded the degree of Bachelor of Science in Engineering Mechanics.

The following substitution in the core curriculum is required:

Aero 361. Thermofluid Dynamics — replaces Aero 332

In addition to the core curriculum, the following courses are required for the major:

Aero 456. Flight Mechanics I
Math 351. Applied Differential Equations
Mech 350. Experimental Stress Analysis
Mech 355. Materials Science I
Mech 361. Vector Engineering Mechanics
Mech 362. Mechanics of Materials
Mech 464. Engineering Design
{ Physics 335. Modern Physics for Engineers
or
Physics 430. Introduction to Modern Physics
A four course unit sequence in dynamics, stress analysis, or materials
One course unit from the offerings of the Basic or Engineering Sciences Divisions
Three course units from the offerings of all departments (these may include Armnshp 400 or academic courses taught by the Navigation Division)

Engineering Sciences Major

Administered by the Department of Civil Engineering, Engineering Mechanics and Materials

The Major in Engineering Sciences is designed to provide a broad education in the engineering sciences as preparation for effective performance in an engineering specialty and for future graduate study in engineering. Cadets who successfully complete this major are awarded the degree of Bachelor of Science in Engineering Sciences.

The following substitution in the core curriculum is required:

Aero 361. Thermofluid Dynamics — replaces Aero 332

In addition to the core curriculum, the following courses are required for the major:

Aero 456. Flight Mechanics I
Aero 461. Propulsion I
Astro 451. Astrodynamics
Astro 452. Linear Control System Analysis
Mech 361. Vector Engineering Mechanics
Math 330. Applied Engineering Mathematics
Math 351. Applied Differential Equations
Mech 355. Materials Science I
Mech 362. Mechanics of Materials
{ Physics 335. Modern Physics for Engineers
or
Physics 430. Introduction to Modern Physics
Science 350. Linear Systems Analysis
One course unit from the Department of Electrical Engineering
Two course units of additional engineering science courses
A two course unit design sequence in one of the following areas: Airlift Vehicles, Propulsion, Control Systems, Space Vehicles, Systems Design, Computer Design, Electronics, Aerospace Structures, Metallurgy, Materials
One course unit from the offerings of all departments (this may include Armnshp 400 or academic courses taught by the Navigation Division)

General Engineering Major

Administered by the Engineering Sciences Division

The Major in General Engineering is designed for the student whose interests are in the general field of engineering but who desires a broad background rather than a particular specialization. The major establishes a route to the engineering degree for the student taking the basic math sequence and permits the widest selection of options among the engineering majors.

The following substitutions in the core curriculum are recommended:

Aero 361. Thermofluid Dynamics — for Aero 332

In addition to the core curriculum, the following courses are required for the major:

Math 351. Applied Differential Equations
Science 350. Linear Systems Analysis
Two course units from the offerings of the Department of Aeronautics
Two course units from the offerings of the Department of Astronautics and Computer Science
Three course units from the offerings of the Department of Civil Engineering, Engineering Mechanics and Materials

Two course units from the offerings of the Department of Electrical Engineering

One course unit from the offerings of the Department of Mathematical Sciences

Two course units from the offerings of the Engineering Sciences Divisions (these may include Armnshp 400 or academic courses taught by the Navigation Division)

Three course units from the offerings of all departments (these may include Armnshp 400 or academic courses taught by the Navigation Division)

General Studies Major

Administered by the Directorate of Counseling and Scheduling

The Major in General Studies is offered to those cadets who wish to broaden their knowledge in several disciplines and who desire considerable latitude in selection of their courses.

In addition to the core curriculum, the following courses are required for the major:

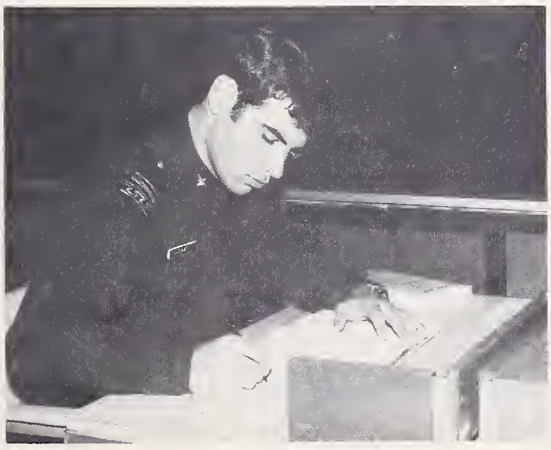
Six course units from the offerings of one of the four academic areas of concentration

Four course units from the offerings of a second academic area

Two course units from the offerings of a third academic area

Five course units from the offerings of all departments (these may include Armnshp 400 or academic courses taught by the Navigation Division)

Areas of concentration include: Basic Sciences, Engineering Sciences, Humanities and Social Sciences



Geography Major

Administered by the Department of Economics, Geography and Management

The Major in Geography provides an understanding of the complex geographic relationships in the world today. This major requires a foundation in both cultural and physical geography. Based on this foundation, a cadet may concentrate in depth in physical, cultural, or regional geography. The geography major is of particular value to those cadets contemplating Air Force careers in operations planning, foreign area analysis, intelligence, or cartography.

In addition to the core curriculum, the following courses are required for the major:

Geog 242. Analytical Techniques in Geography

Geog 350. Cultural Geography
or
Geog 370. Political Geography
or
Geog 372. Economic Geography

Geog 352. Systematic Physical Geography I
or
Geog 353. Systematic Physical Geography II

Geog 471. Western Europe and the Mediterranean
or
Geog 472. USSR and Eastern Europe
or
Geog 475. Geography of the Developing World/ East Asia and Latin America

Geog 340. Cartography
or
Geog 382. Geographic Application of Imagery Analysis

Geog 491. Seminar in the Basis of Geographic Thought

Four additional course units from the geography offerings of the Department of Economics, Geography and Management

Two course units related to area of concentration selected, with approval of faculty advisor

Five course units from the offerings of all departments (these may include Armnshp 400 or academic courses taught by the Navigation Division)

History Major

Administered by the Department of History

The Major in History provides an understanding of contemporary problems by studying

those forces in the past which have shaped the world of the present. The factual knowledge imparted and the perspective developed are of importance to the education of all professional Air Force officers and are of particular value for those cadets contemplating careers in operations, plans, or intelligence activities. The major emphasizes the development of historical judgment, research techniques, and writing skills.

In addition to the core curriculum, the following courses are required for the major:

History 330. Historical Methods

{ History 332. United States Diplomatic History
or
History 479. American Institutions and Ideas }

{ History 344. Origins of Modern Europe
or
History 345. Modern European History }

{ History 300. The United States in a Changing World
and
Pol Sci 412. Defense Policy }

Between seven and nine-course units approved by the advisor in one of the following: General History; American Studies; and Area Studies with a concentration in Europe, the Far East, Latin America, the Middle East, Russia and Africa

Between four and six course units from the offerings of all departments (these may include Armnshp 400 or academic courses taught by the Navigation Division)

Humanities Major

Administered by the Humanities Division

The Major in Humanities is offered for those cadets who wish to increase their knowledge in the humanistic areas of language, history, literature, philosophy, and the fine arts.

In addition to the core curriculum, the following courses are required for the major:

{ { Beh Sci 351. Cultural Anthropology
and
History 344. Origins of Modern Europe
or
{ One course unit of intermediate foreign language
and
One course unit from the offerings of any department } }

Fine Art 451. Introduction to the Visual Arts

Fine Art 458. Music Appreciation

Two course units of US and/or area history

{ English 406. Western World Literature
and
Philos 440. Ethics }

Three course units of literature courses from the Department of English and Fine Arts and the Department of Foreign Languages

Two course units in philosophy from the Department of Political Science and Philosophy

Five course units from the offerings of any department (including Armnshp 400 or academic courses taught the Navigation Division)

International Affairs Major

Administered by the Department of Political Science and Philosophy

The Major in International Affairs is designed to develop Air Force officers with a comprehensive understanding of contemporary political problems and issues. Courses in the major form the basis for Air Force duties across a broad range of fields allowing the officer to be a generalist while also pursuing assignments requiring skills in research and analysis. Particularly suited to this major are careers in operations and command duties, plans, attache duty, military assistance, military-political affairs, as well as staff and command positions with the Air Force, Unified Commands, Joint Staff, and Department of Defense. In addition to the core curriculum, the following courses are required for the major:

Pol Sci 232. Comparative Politics

Pol Sci 349. Political Analysis

Pol Sci 352. Political Theory

{ Pol Sci 412. Defense Policy
or
History 300. The United States in a Changing World }

Seven course units approved by the advisor in one of the following areas of concentration: International Politics; Western European, Asian, Latin American, Soviet, Middle Eastern or African Studies; National Security Policy; or American Politics

Six course units from the offerings of all departments (these may include Armnshp 400 or academic courses taught by the Navigation Division)

Life Sciences Major

Administered by the Department of Life Sciences

The Major in Life Sciences is intended for the student whose abilities and interests lie in the area of life science and its application to the aerospace mission of the Air Force. It is designed to prepare cadets for a junior officer position in research, development or graduate training. It emphasizes the use of laboratory methods not only for reinforcement of lecture material but also for individual research projects. This major is a suggested preparatory sequence for advanced training in the biological sciences.

In addition to the core curriculum, the following courses are required for the major:

CLASSES OF 1976-1977

Life Sci 263. Introduction to Life Science
Life Sci 280. Fundamentals of Ecology
Life Sci 363. Genetics
Life Sci 373-4. Bio-Organic Molecular Processes I and II
Life Sci 375-6. Laboratory Techniques in Molecular Processes I and II
Life Sci 444. Radiation Biology and Biotechnology
Life Sci 460. Molecular Biology
Life Sci 465-466. Functional Anatomy I and II
Two course units from the offerings of the Department of Life Sciences
Four course units from the offerings of all departments (these may include Armnshp 400 or academic courses taught by the Navigation Division)

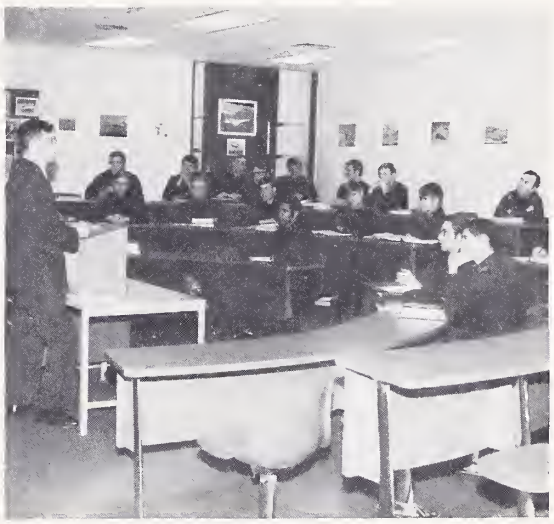
CLASS OF 1978 AND SUBSEQUENT CLASSES

Life Sci 330. Biological Science I
Life Sci 331. Biological Science II
Life Sci 363. Genetics
Life Sci 380. Bioenvironmental Science I
Life Sci 381. Bioenvironmental Science II
Life Sci 383. Human Anatomy
Life Sci 447. Advanced Physiology I
Life Sci 448. Advanced Physiology II
Three course units from the offerings of the Department of Life Sciences
Six course units from the offerings of all departments (these may include Armnshp 400 or academic courses taught by the Navigation Division)

Management Major

Administered by the Department of Economics, Geography and Management

The Major in Management provides the cadet with the tools, techniques, and attitudes that will assist him in making significant contributions as a junior officer. A principal objective is to accelerate the student's ability to act in a mature and meaningful fashion under conditions of responsibility. The decision-making process is the principal environment toward which most of the material is directed.



In addition to the core curriculum, the following courses are required for the major:

Mgt 330. Financial Accounting
Mgt 331. Statistical Decision Methods
Mgt 336. Introduction to Management and Organizations
Mgt 339. Introduction to Management Science
Mgt 360. Quantitative Decision Methods
Mgt 361. Personnel Management and Industrial Relations
Econ 333. Price Theory
Law 462. Government Contract Law
Four course units related to the management area selected with approval of the faculty advisor
Five course units from the offerings of all departments (these may include Armnshp 400 or academic courses taught by the Navigation Division)

Mathematics Major

Administered by the Department of Mathematical Sciences

The Major in Mathematics is designed to provide a thorough background for analyzing and solving the complex technical, operational and management problems in today's modern Air Force. Sequences in analysis, applied math, and operations research provide breadth of training in fundamentals. Application of fundamentals is stressed through elective courses in other disciplines. This program provides excellent preparation for graduate work in mathematics, the physical sciences, engineering, and operations research.

In addition to the core curriculum the following courses are required:

- Math 341. Introductory Numerical Analysis
- Math 357. Probability
- Math 360. Linear Algebra
- Math 366. Advanced Calculus I
- Math 371. Introduction to Operations Research
- One of three five-course-unit sequences in either Mathematical Analysis, Applied Math, or Operations Research
- Two course units related to mathematics applications, selected from an approved list of courses
- Five course units from the offerings of all departments (these may include Armnshp 400 or academic courses taught by the Navigation Division)

Physics Major

Administered by the Department of Physics

The Major in Physics concentrates on basic physical principles and mathematics. It provides an excellent academic background for a wide range of technical assignments within the Air Force, particularly in the field of research and development. It also provides a sound basis for graduate work in physics, related applied sciences, and a wide variety of engineering science disciplines. For the cadet desiring a study area in applied physics, a minor in Atmospheric Science is available. Three Atmospheric Science courses may be substituted for the following: Physics 465; one course unit from the offerings of the Department of Mathematical Sciences; one course unit from the offerings of the Basic or Engineering Sciences Divisions (except physics).

In addition to the core curriculum, the following courses are required for the major:

- Math 330. Applied Engineering Mathematics
- Math 351. Applied Differential Equations
- Two course units from the offerings of the Department of Mathematical Sciences
- Physics 341. Laboratory Techniques
- Physics 355. Classical Mechanics
- Physics 363-364. Introduction to Modern Physics I and II
- Physics 465. Statistical Physics
- Physics 461. Electromagnetic Theory I
- Physics 473. Quantum Mechanics I
- Physics 490. Advanced Physics Lab (two course units)
- One course unit from the offerings of the Department of Physics, selected with approval of the faculty advisor
- One course unit from the offerings of the Basic or Engineering Sciences Divisions (except physics), selected with approval of the faculty advisor
- Two course units from the offerings of all departments (these may include Armnshp 400 or academic courses taught by the Navigation Division)

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HENRY S. FELLERMAN, Major AUS (Ret.), *Director of Historical Studies* — B.A., Roosevelt University; M.A., University of Denver

ACADEMIC FACULTY AND STAFF

Includes members of the Faculty and other personnel involved in cadet mission activities during the spring semester, 1975.

Dean of the Faculty and Permanent Professor

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B.S., A.M., University of Missouri,
Ph.D., University of Denver

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Division of Basic Sciences

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CAPT. JOSEPH B. WILLIAMS, JR. — B.S., M.S., University of Maryland

DEPARTMENT OF PHYSICS

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CAPT. ALEXANDER M. SADOWSKI — B.S., Georgetown University; M.S., University of Arizona

CAPT. HAL W. WOLD — B.S., Wisconsin State University; M.S., University of Utah

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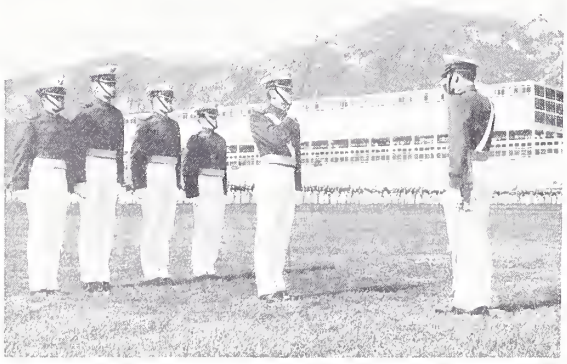

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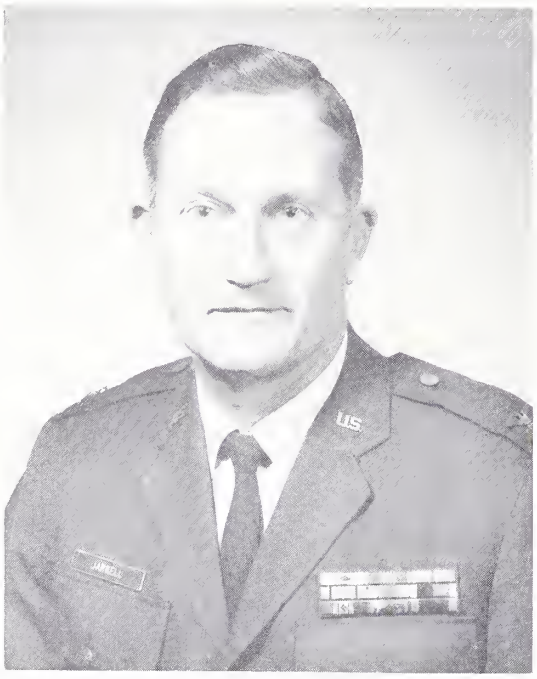

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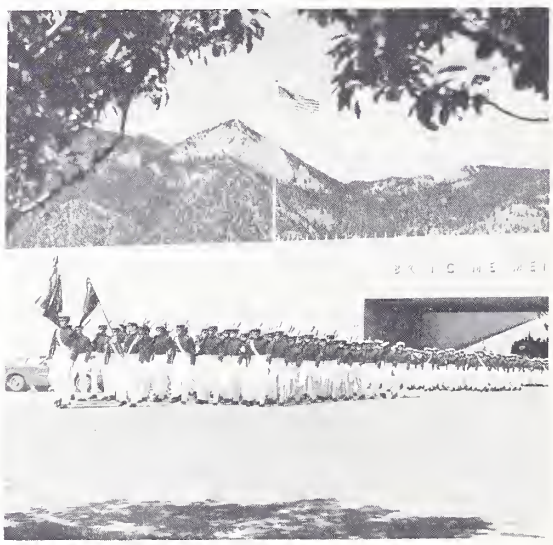
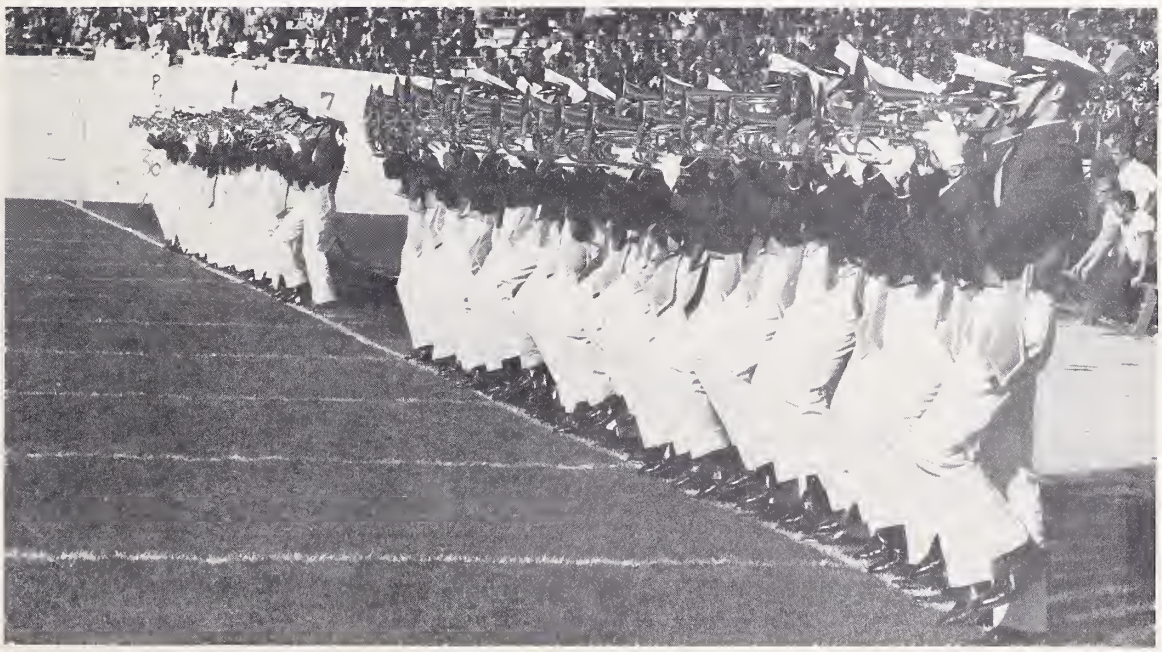


Academy Band

Cadet Chorale



Cadet Drum and Bugle Corps

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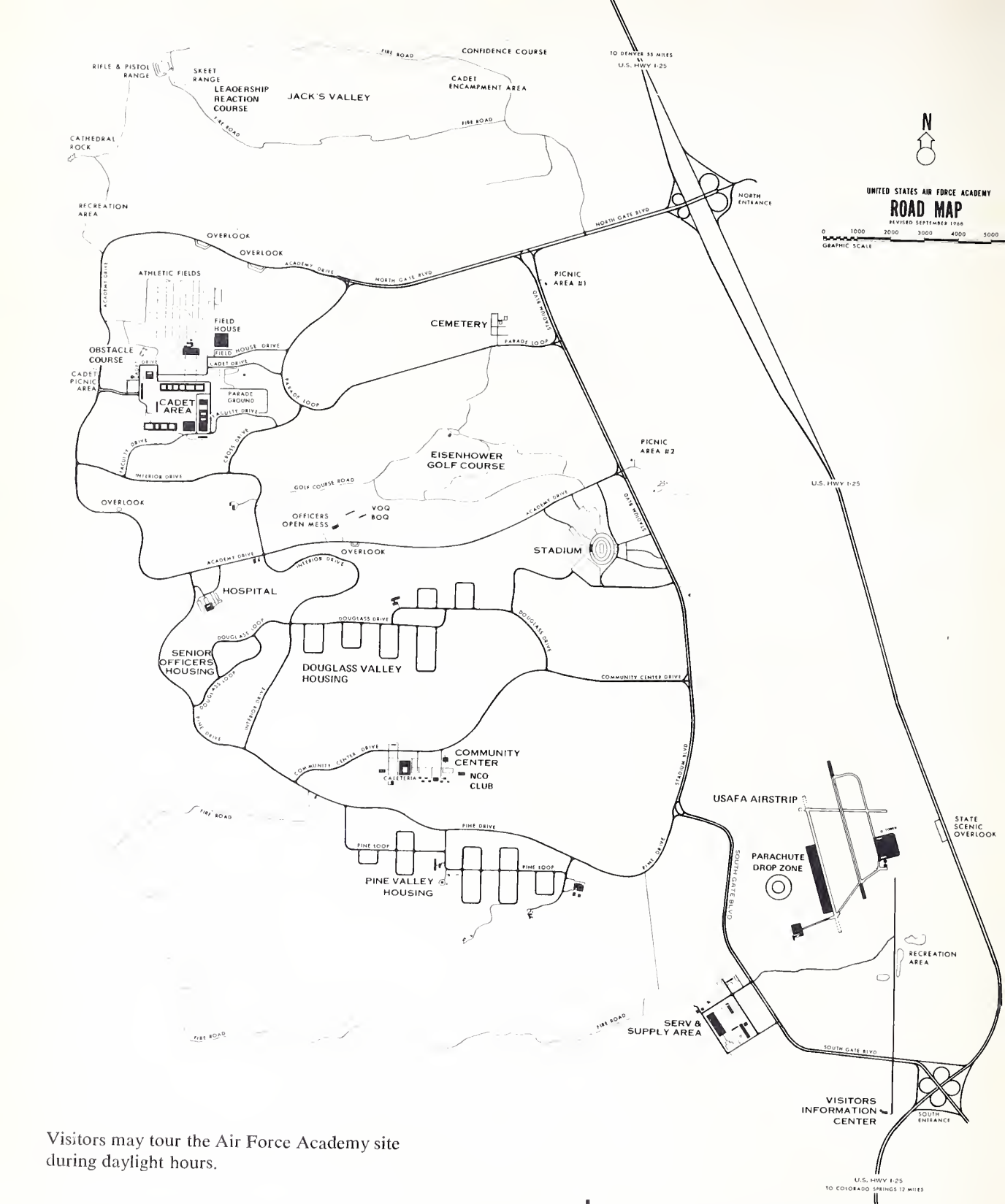

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